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ADMIRAL, MODEL 5R11

TRADE NAME	Admiral, Models 5R11, 5R12, 5R13, 5R14 (Ch. 5R1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago, Illinois
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC RATING .27 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	530-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer parallel with base of dial.

Use Isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	250MMF	High side to Antenna stator of tuning cap. Low side to B-.	455KC	Tuning cap fully open.	Across Voice Coil	A1, A2 A3, A4	Adjust for maximum output.
2.	250MMF	"	1620KC	"	"	A5	" " " "
3.		Loop	1400KC	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust of maximum output.

ADMIRAL
CHASSIS 5R1

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PARTS LIST AND DESCRIPTIONS

ADMIRAL
MODEL 5R11

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7	12SA7	8AD	
V2	IF Amp.	12SK7	12SK7	8N	
V3	DET-AVC-AF	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	67A10	PRSA150/50-30	EDL5315	DSB-5030-150	TA-530	Filter Red
C1B	30	150					"	Yellow
C2	50	500	65B6-4	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap
C3	.05	400	64B1-22	P438-05	GT4S5	ST-4-05	TM-15	Isolation See Note
C4	.1	200	64B1-30	P288-1	GT2P1	ST-2-1	TM-1	AVC Filter
C5	250		65B6-5	1468-00025	5W5T25	MO.5-325	1FM-325	Diode Filter
C6	.01	400	64B1-25	P438-01	GT4S1	ST-4-01	TM-11	Audio Coupling
C7A	10000		†	P488-01	GT4S1	ST-4-01	TM-11	"
C7B	250			1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass
C8	.02	400	64B1-24	P488-02	GT4S2	ST-4-02	TM-12	Output Plate Bypass
C9	.05	400	64B1-22	P438-05	GT4S5	ST-4-05	TM-15	Line Filter
C10	.18	200	64A2-8	P288-15	GT4P2	ST-4-8	78P3	" Isolation See Note

Note. Used only in sets with model numbers having a "UL" suffix.
† Items C7A, C7B, R6 and R7 are combined into one unit obtainable under MFGRS. part No. 63A5-1

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	75B1-25	D13-137	AM-63-Z	Volume control
B	Shaft		Not. Req.	E	KSS-3	Attach to R1A Per Instructions.
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

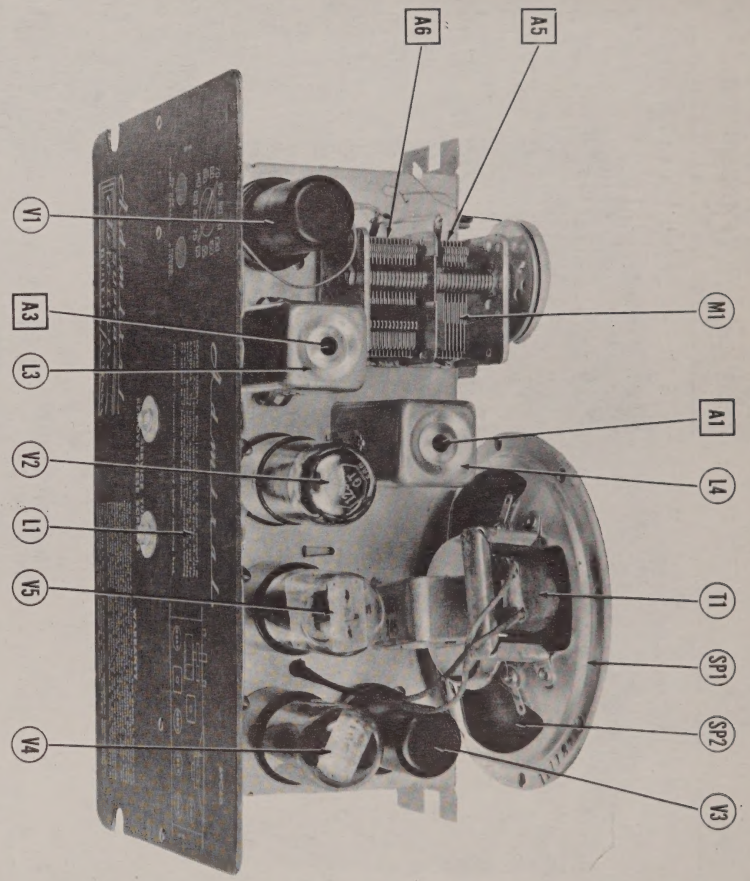
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	60B8-223	BTS-22K	Red-Red-Or. Osc. Grid
R3	150KΩ	½	60B8-154	BTS-150K	Br.-Grn.-Yl. Line Isolation See Note
R4	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
R5	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
R6	470KΩ	½	†	BTS-470K	" Plate Load
R7	470KΩ	½	†	BTS-470K	Output Grid
R8	150Ω	½	60B8-151	BW-½-150	Br.-Grn.-Br. " Cathode
R9	33Ω	1	60B28-3		Or.-Or.-Blk. Surge Limiter
R10	1000Ω	1	60B28-2	BTA-1000	Br.-Blk.-Red Filter

Note. Used in Underwriters approved models only.
† Items C7A, C7B, R6 and R7 are combined into one unit, and are obtainable under MFGRS PT#63A5-1.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	THORDAR'N PART No.	NOTES
T1	2000Ω	3.1Ω	140Ω	.6Ω	98A4	A-3330	A-2928	T22545	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

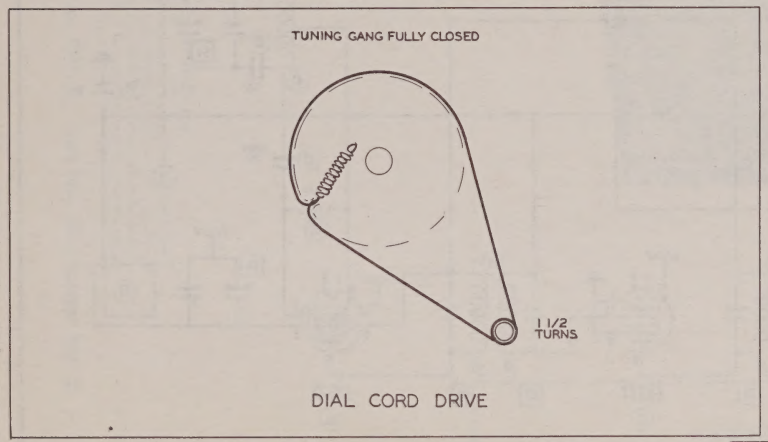
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ADMIRAL PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.1Ω	78B26-1‡	ST-105* Model P5.X	5A07	‡ Includes output transformer * Drill new mounting holes.
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	ADMIRAL PART No.	MEISSNER PART No.
L1	Loop Ant.	1.2Ω		69C60	
L2	Osc. Coil	6Ω		69A20-2	14-1060
L3	Input IF	24Ω	24Ω	72B50	
L4	Output IF	24Ω	24Ω	72B51	

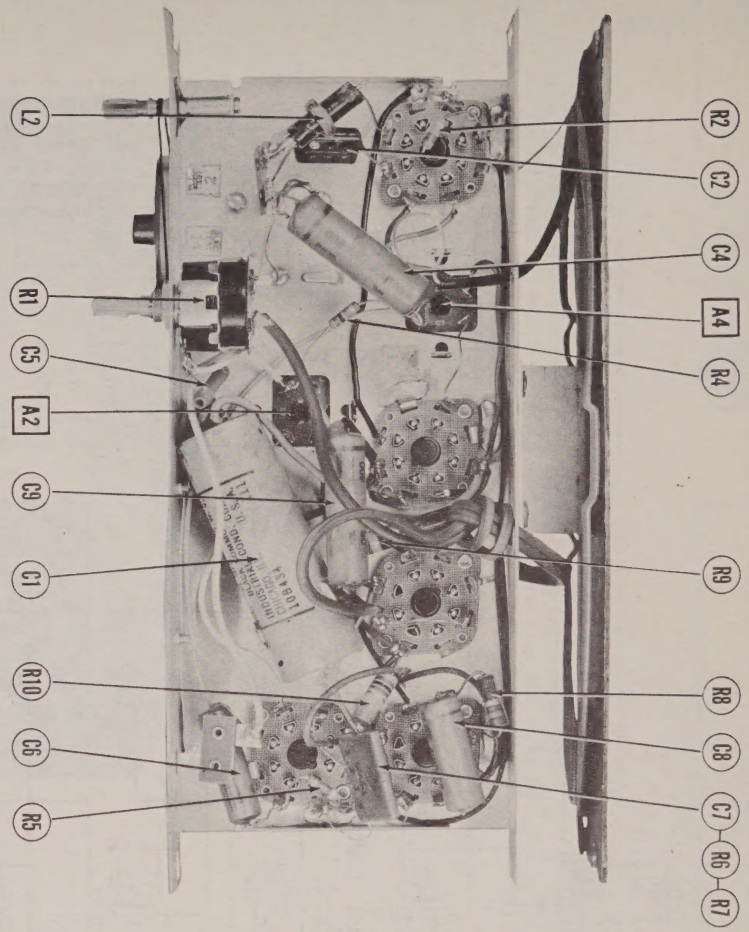
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M1	2 Gang Var. Cap	68B19	(29-467MF, 21-130MMF)
	Dial Pointer	25A31-3	Ebony
	" "	25A31-2	Ivory
	" "	25A31-1	Walnut
	Knob	33A32-6	Ebony
	"	33A32-5	Ivory
	"	33A32-4	Walnut
	"	33A32-7	Walnut & Gold

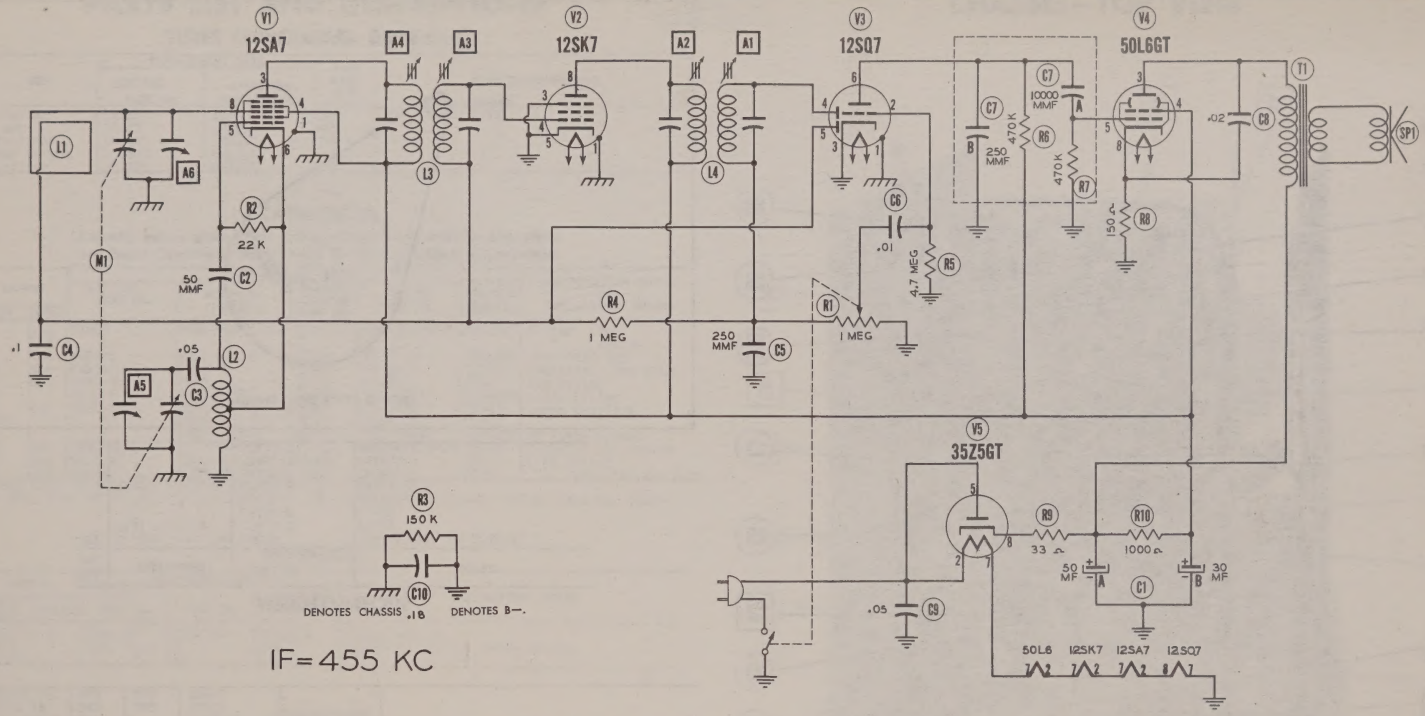


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



ADMIRAL MODEL 5R11



IF=455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	12SA7	0V	11VAC	95VDC	95VDC	$-8.3VDC	0Ω	24VAC	-.4VDC
V2	12SK7	0V	24VAC	0V	-.4VDC	0V	95VDC	36VAC	95VDC
V3	12SQ7	0V	-.8VDC	0V	-.4VDC	-.3VDC	50VDC	0V	11VAC
V4	50L6GT	0V	36VAC	118VDC	95VDC	0V	125VDC	85VAC	6VDC
V5	35Z5GT	0V	117VAC	110VAC	95VDC	117VAC	125VDC	85VAC	125VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	12SA7	0Ω	12Ω	*1000Ω	*1000Ω	22KΩ	.5Ω	24Ω	2 Meg.
V2	12SK7	0Ω	24Ω	0Ω	2 Meg.	0Ω	*1000Ω	38Ω	*1000Ω
V3	12SQ7	0Ω	4.7 Meg.	0Ω	2 Meg.	1 Meg.	*470KΩ	0Ω	12Ω
V4	50L6GT	0Ω	38Ω	170Ω	*1000Ω	470KΩ	70KΩ	85Ω	150Ω
V5	35Z5GT	Inf.	120Ω	120Ω	90KΩ	120Ω	90KΩ	85Ω	90KΩ

* Measured from pin 8 of V5

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497-1

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

ADMIRAL CHASSIS 19A1

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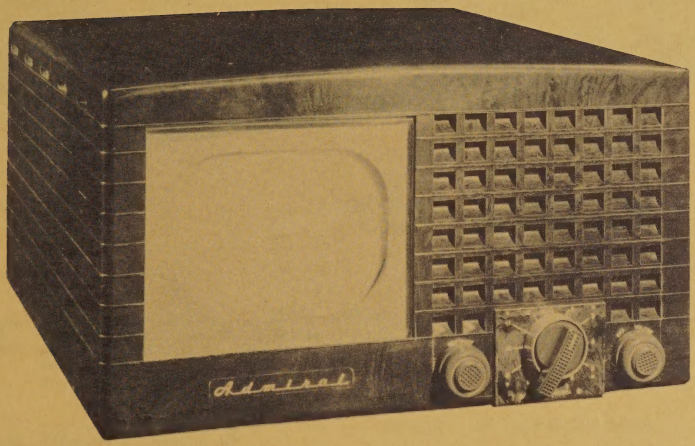

ADMIRAL CHASSIS 19A1

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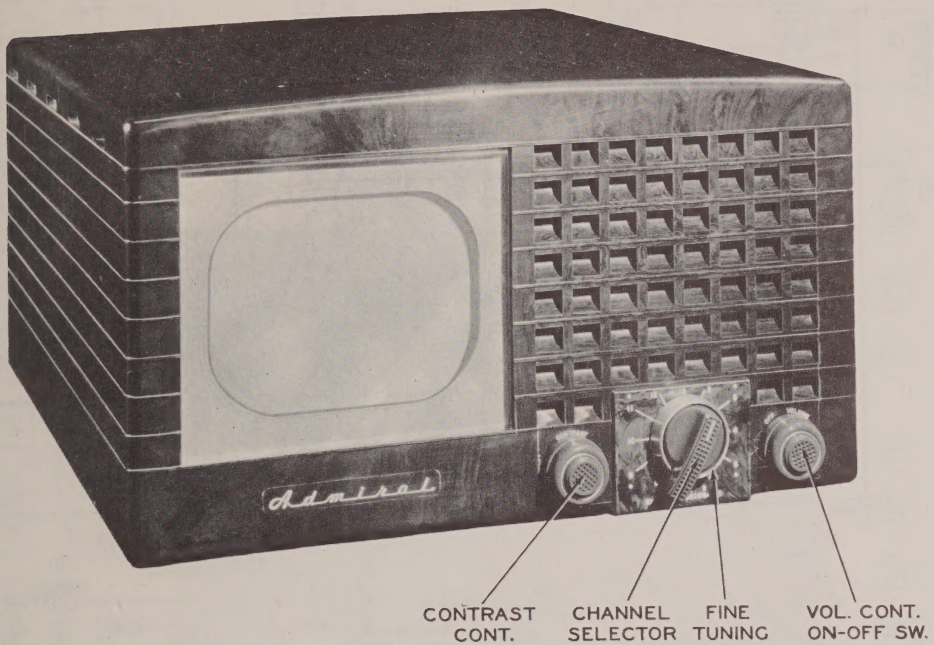
Date 4/49—No. 497-2 Set No. 59—Folder No. 2



ADMIRAL
CHASSIS 19A1

MODEL 19A11S

TRADE NAME	Admiral Models 19A11S, 19A11SN, 19A12S, 19A12SN, 19A15S, 19A15SN (Chassis 19A1)
MANUFACTURER	Admiral Corporation, 3800 West Cortland, Chicago 47, Illinois
TYPE SET	Television Receiver
TUBES	Eighteen
POWER SUPPLY	117 Volts, 60 cycle AC — RATING .85 Amps @ 117 Volts.
TUNING RANGE—	Channels 2 through 13

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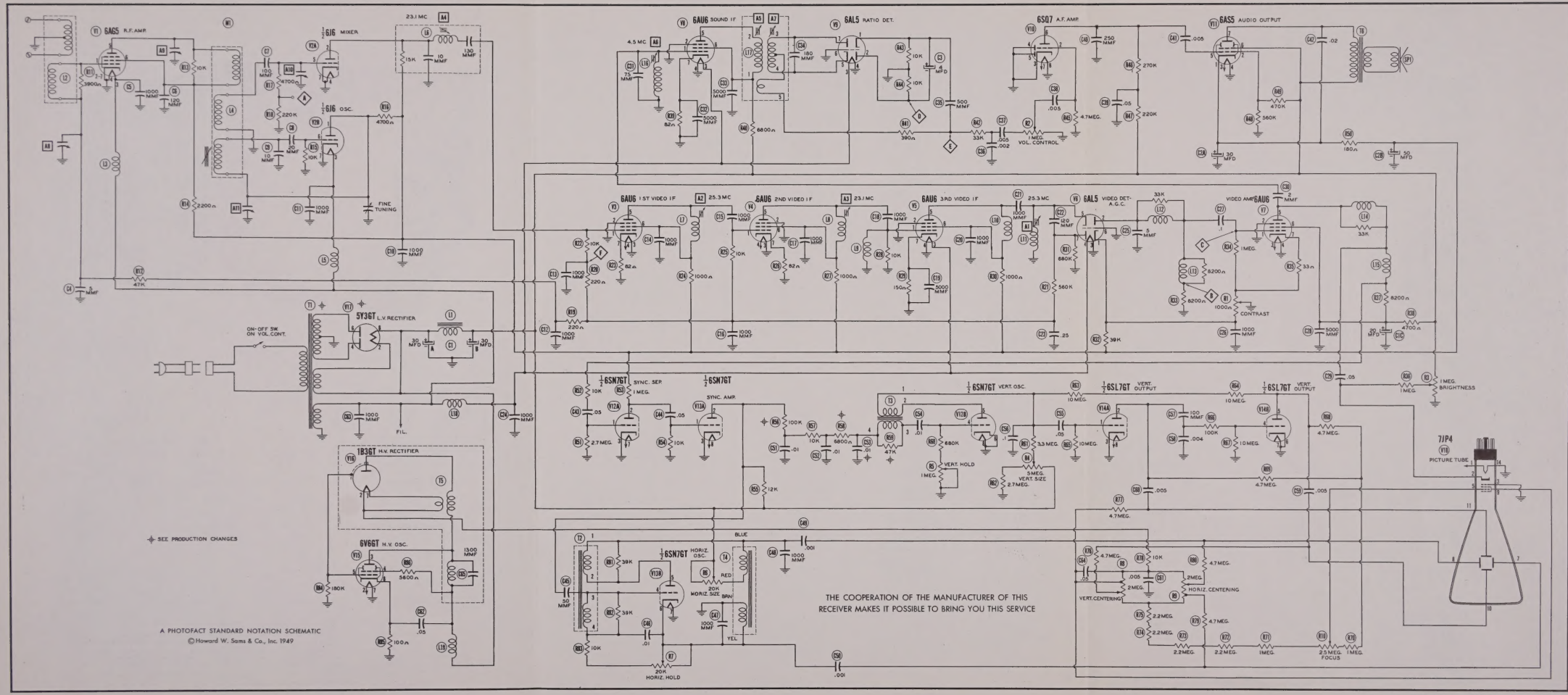
6AG5 R.F. AMP.
1/2 6J6 MIXER
1/2 6J6 O.S.C.
23.1 MC
4.5 MC
6AU6 SOUND I.F.
6AL5 RATIO DET.
6SQ7 A.F. AMP.
6AS5 AUDIO OUTPUT
6AU6 1ST VIDEO I.F.
25.3 MC
6AU6 2ND VIDEO I.F.
23.1 MC
6AU6 3RD VIDEO I.F.
25.3 MC
6AL5 VIDEO DET.-A.G.C.
VIDEO AMP. 6AU6
5Y3GT L.V. RECTIFIER
ON-OFF SW. ON VOL. CONT.
FIL.
1B3GT H.V. RECTIFIER
6V6GT H.V. OSC.
1/2 6SN7GT SYNC. SEP.
1/2 6SN7GT SYNC. AMP.
1/2 6SN7GT VERT. OSC.
1/2 6SL7GT VERT. OUTPUT
1/2 6SL7GT VERT. OUTPUT
1/2 6SN7GT HORIZ. OSC.
7JP4 PICTURE TUBE
FINE TUNING
VOL. CONTROL
CONTRAST
BRIGHTNESS
VERT. HOLD
VERT. SIZE
VERT. CENTERING
HORIZ. CENTERING
HORIZ. SIZE
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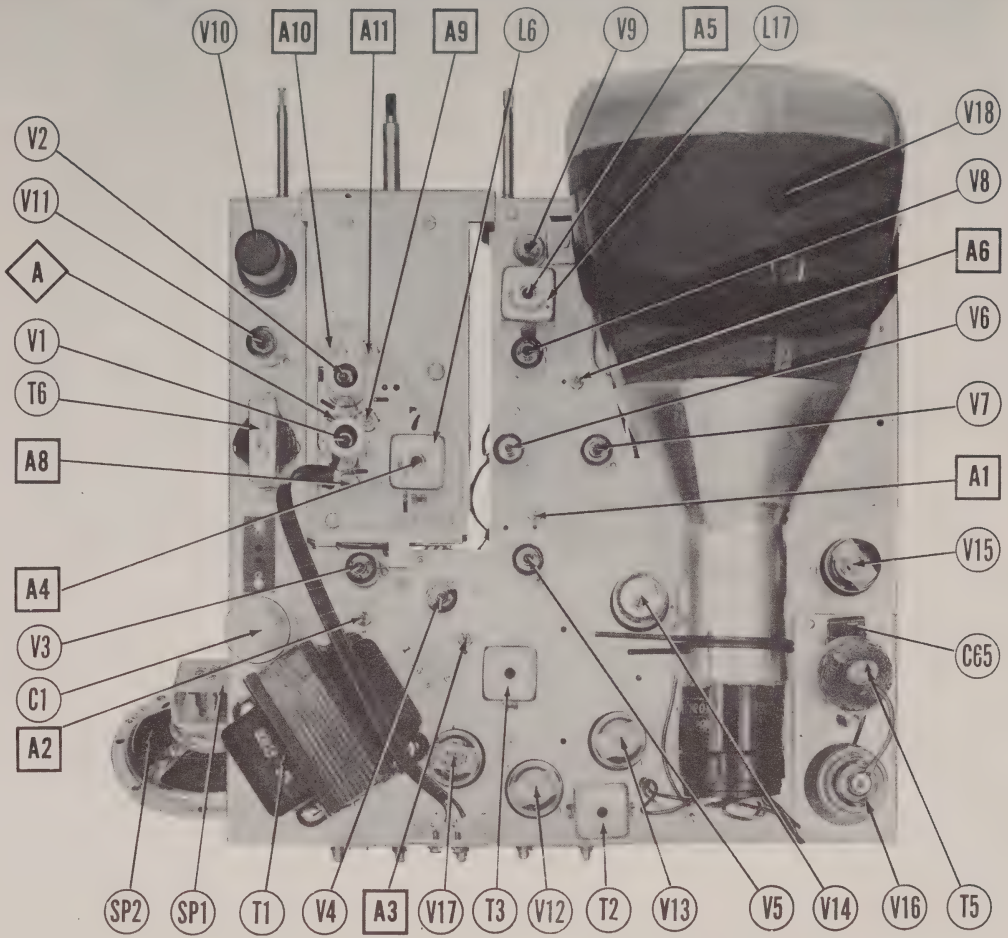
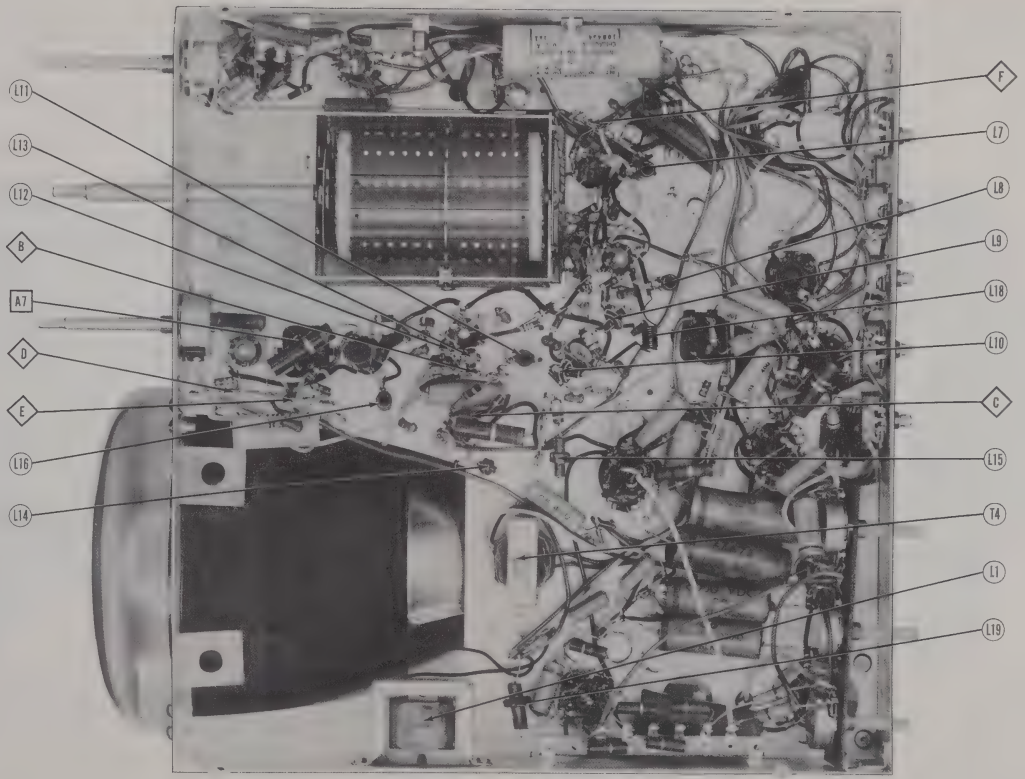
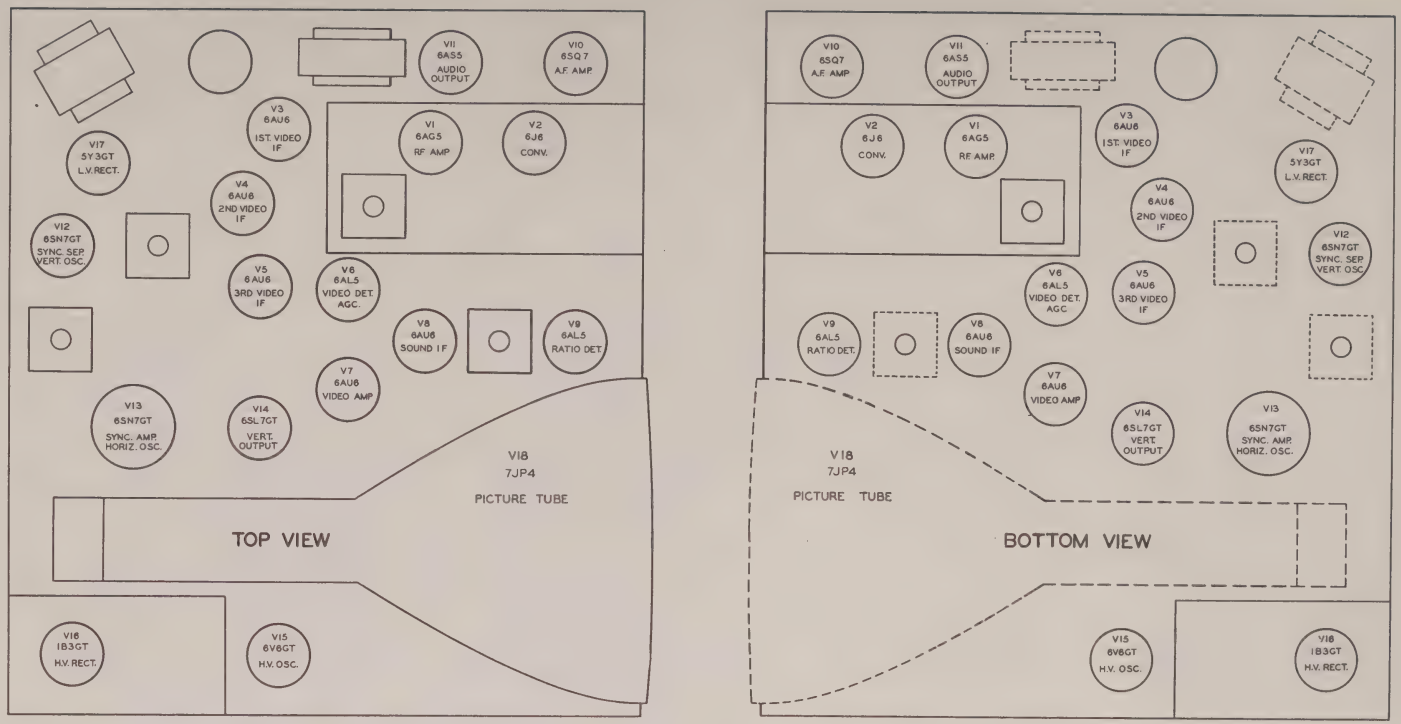


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION


V17 5Y3GT L.V.RECT.
V3 6AU6 IST. VIDEO IF
V11 6AS5 AUDIO OUTPUT
V10 6SQ7 A.F. AMP.
V1 6AG5 RF. AMP.
V2 6J6 CONV.
V4 6AU6 2ND VIDEO IF
V12 6SN7GT SYNC. SEP. VERT. OSC.
V5 6AU6 3RD VIDEO IF
V6 6AL5 VIDEO DET. AGC.
V8 6AU6 SOUND I F
V9 6AL5 RATIO DET.
V7 6AU6 VIDEO AMP.
V13 6SN7GT SYNC. AMP. HORIZ. OSC.
V14 6SL7GT VERT. OUTPUT
V18 7JP4 PICTURE TUBE
TOP VIEW
V16 1B3GT H.V. RECT.
V15 6V6GT H.V. OSC.
V10 6SQ7 A.F. AMP
V11 6AS5 AUDIO OUTPUT
V2 6J6 CONV.
V1 6AG5 RF. AMP.
V3 6AU6 1ST. VIDEO IF
V17 5Y3GT L.V. RECT.
V4 6AU6 2ND VIDEO IF
V12 6SN7GT SYNC. SEP. VERT. OSC.
V6 6AL5 VIDEO DET. AGC.
V5 6AU6 3RD VIDEO IF
V9 6AL5 RATIO DET.
V8 6AU6 SOUND IF
V7 6AU6 VIDEO AMP.
V14 6SL7GT VERT. OUTPUT
V13 6SN7GT SYNC. AMP. HORIZ. OSC.
V18 7JP4 PICTURE TUBE
BOTTOM VIEW
V15 6V6GT H.V. OSC.
V16 1B3GT H.V. RECT.

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

VIDEO IF ALIGNMENT

Remove one oscillator coil (6 terminal coil) section of any channel from tuner turret. Rotate the tuner until the open coil section is adjacent to the contact strip. Turn contrast control to full clockwise position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	5000MMF	High side to point A. Low side to chassis.	25.3MC (Unmod.)	See Pre-alignment Instructions.	DC Probe to point (B) Common to chassis.	A1, A2	Adjust for maximum deflection. (Maintain generator output so VTVM indicates approximately 1 volt
2.	5000MMF	"	23.1MC	"	"	A3, A4	"

OVERALL IF RESPONSE CHECK

Keep marker and sweep generator output no higher than necessary. A 3 volt bias battery with negative terminal connected to point F and positive to chassis will allow greater signal input without distortion of the response curve.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	5000MMF	High side to point A. Low side to chassis.	25MC (10MC Sweep)	25.75MC 24.3MC 22.0MC 21.25MC	See Pre-alignment Instructions.	Vert. Amp. to point (E) Low side to chassis.		Check symmetry of pattern and placement of markers as per Fig 1. If necessary slightly retouch A1, A2, A3, A4 to shift placement of markers.

SOUND IF ALIGNMENT

The sound IF system should be aligned at 4.5MC ± 1KC. The 4.5MC generator should be checked for accuracy against a crystal or some form of frequency standard before alignment is started. If a frequency standard is not available the setting of A7 in step 5 should be set using a television signal instead of an inaccurate 4.5MC generator. This touch-up adjustment should not be done until all other alignment has been completed.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to point C. Low side to chassis.	4.5MC	Any	DC Probe to point (D) Common to chassis.	A5, A6	Adjust for maximum deflection maintain sig. gen. output so VTVM reads approximately 1 volt.
5.	.01MFD	"	"	"	DC Probe to point (F) Common to chassis.	A7	Adjust for zero reading. A positive & negative reading is obtained on either side of the correct setting. Replace Osc. Coil section that was removed.

RF AMP. & MIXER ALIGNMENT

Before starting RF and mixer alignment connect a jumper across the 1st video IF grid load resistor (R22).

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	Across Antenna Terminals	207MC (10MC Sweep)	205.25MC 209.75MC	12	Vert. Amp. to Point (A) Common to chassis.	A8, A9 A10	Check curve of Fig 2 with markers. If necessary, adjust A8, A9 and A10 for max. amplitude & symmetry.
7.	Direct	"	213MC (10MC Sweep)	211.25MC 215.75MC	13	"		Check on channels to see that markers appear as per Fig 2. If optimum response is desired for one particular channel adjust A8, A9 and A10 for that channel. Check all other channels to see that they have not been appreciably affected.
			201MC (10MC Sweep)	199.25MC 203.75MC	11			
			195MC (10MC Sweep)	193.25MC 197.75MC	10			
			189MC (10MC Sweep)	187.25MC 191.75MC	9			
			183MC (10MC Sweep)	181.25MC 185.75MC	8			
			177MC (10MC Sweep)	175.25MC 179.75MC	7			
			85MC (10MC Sweep)	83.25MC 87.75MC	6			
			79MC (10MC Sweep)	77.25MC 81.75MC	5			
			69MC (10MC Sweep)	67.25MC 71.75MC	4			
			63MC (10MC Sweep)	61.25MC 65.75MC	3			
			57MC (10MC Sweep)	55.25MC 59.75MC	2			

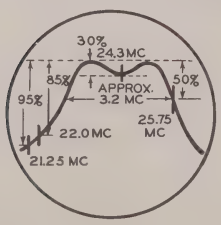


FIG. 1

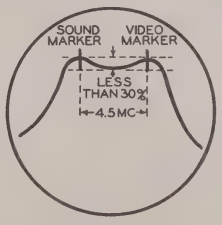


FIG. 2

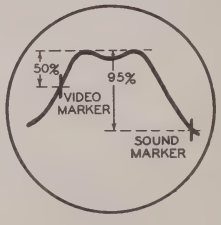


FIG. 3

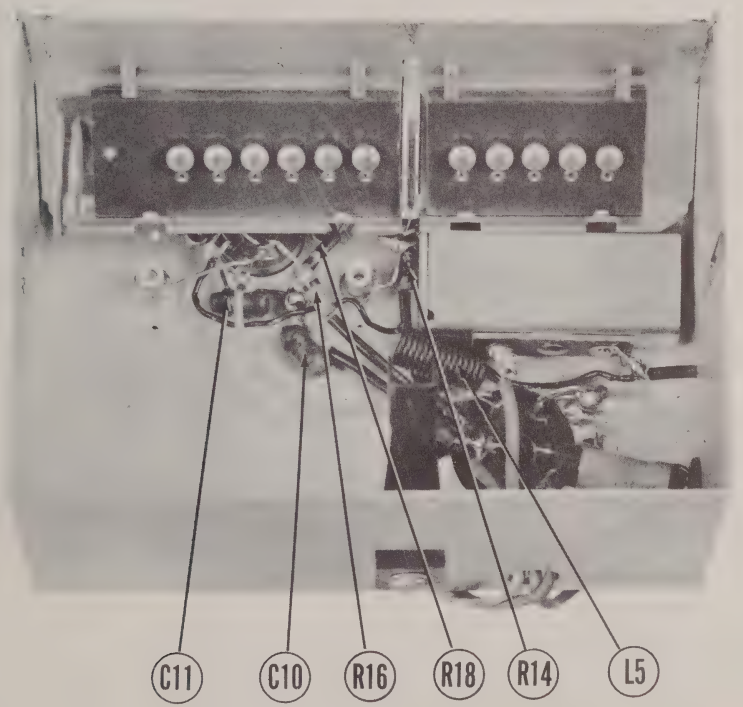
ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

The IF system must be accurately aligned before starting the oscillator alignment. The electrical center of the fine tuning control is fully counter clockwise until it hits the stop. This position allows access through hole in the dielectric disc to the individual oscillator coil slugs, one by one, as the channel selector switch is rotated.

Allgnment of the oscillator circuits may be accomplished in one operation. If misalignment occurrs in all channels adjustment of All may correctly align all channels. However, if only certain channels need aligning, it will be necessary to adjust the individual oscillator coil slugs. Adjustment All is an All channel adjustment and should not be used for one specific channel.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	Across Antenna Terminals	213MC (10MC Sweep)	211.25MC 215.75MC	13	Vert. Amp. to Point B. Low side to chassis.	All or A12 (See above)	Check to see that the video marker appears at the 50% point on the pattern obtained as per Fig 3. See Instructions above.
9.	"	"	207MC (10MC Sweep)	205.25MC 209.75MC	12	"	A13	"
			201MC (10MC Sweep)	199.25MC 203.75MC	11		A14	
			195MC (10MC Sweep)	193.25MC 197.75MC	10		A15	
			189MC (10MC Sweep)	187.25MC 191.75MC	9		A16	
			183MC (10MC Sweep)	181.25MC 185.75MC	8		A17	
			177MC (10MC Sweep)	175.25MC 179.75MC	7		A18	
			85MC (10MC Sweep)	83.25MC 87.75MC	6		A19	
			79MC (10MC Sweep)	77.25MC 81.75MC	5		A20	
			69MC (10MC Sweep)	67.25MC 71.75MC	4		A21	
			63MC (10MC Sweep)	61.25MC 65.75MC	3		A22	
			57MC (10MC Sweep)	55.25MC 59.75MC	2		A23	



RF TUNER-LEFT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
V1	6AG5	-.3VDC	0V	6.3VAC	0V	100VDC	100VDC	0V		
V2	6J6	90VDC	75VDC	6.3VAC	0V	-1VDC	§-4.4VDC	0V		
V3	6AU6	-2VDC	0V	0V	6.3VAC	115VDC	115VDC	.6VDC		
V4	6AU6	-.2VDC	0V	0V	6.3VAC	115VDC	115VDC	.6VDC		
V5	6AU6	0V	0V	6.3VAC	0V	115VDC	115VDC	1VDC		
V6	6AL5	3VDC	-.3VDC	0V	6.3VAC	0V	0V	-.1VDC		
V7	6AU6	-.1VDC	0V	6.3VAC	0V	75VDC	150VDC	.4VDC		
V8	6AU6	0V	0V	6.3VAC	0V	150VDC	150VDC	.9VDC		
V9	6AL5	.2VDC	-.2VDC	6.3VAC	0V	0V	0V	0V		
V10	6SQ7	0V	-.5VDC	0V	0V	0V	75VDC	6.3VAC	0V	
V11	6AS5	125VDC	120VDC	6.3VAC	0V	120VDC	220VDC	210VDC		
V12	6SN7GT	-.8VDC	14VDC	0V	-8VDC -9.5VDC	10VDC 42VDC	0V	6.3VAC	0V	
V13	6SN7GT	-.3VDC	95VDC	0V	-22VDC -32VDC	113VDC 210VDC	0V	0V	6.3VAC	
V14	6SL7GT	-1.7VDC	210VDC	0V	-.5VDC	220VDC	0V	0V	6.3VAC	
V15	6V6GT	0V	6.3VAC	220VDC	200VDC	-40VDC	220VDC	0V	3VDC	
V16	1B3GT		†Do Not	Measure						
V17A	5Y3GT	0V	240VDC	0V	240VAC	0V	240VAC	0V	240VDC	

	PINS	1	2	3	5	7	8	9	10	11	14
V18	7JP4	6.3VAC	72VDC 180VDC	0V	†	†	†	†	†	†	0V

† Do not measure. Cannot make an accurate measurement, due to high impedance of circuit.
§TAKEN WITH VACUUM TUBE VOLTMETER.

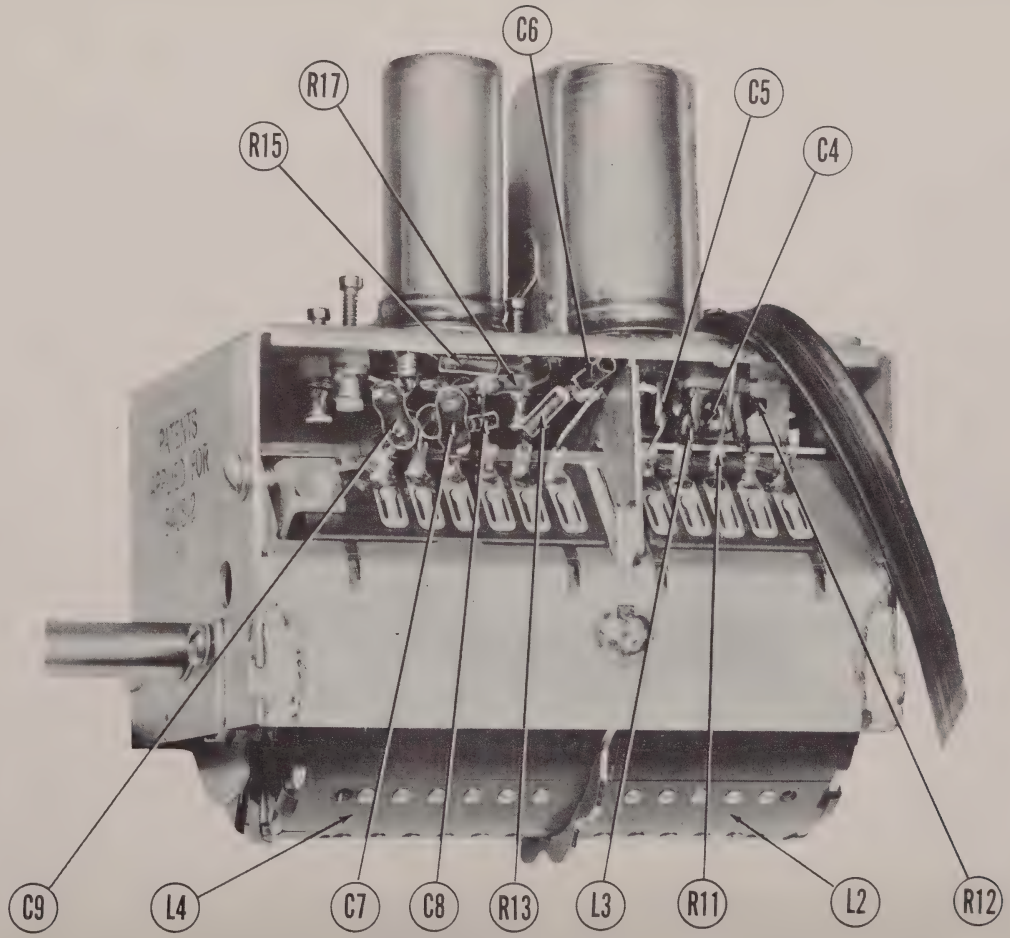
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
V1	6AG5	1.4 Meg.	0Ω	.2Ω	0Ω	* 2.2KΩ	* 2.2KΩ	0Ω		
V2	6J6	*5KΩ	*15KΩ	.2Ω	0Ω	220KΩ	10KΩ	0Ω		
V3	6AU6	1.4 Meg.	0Ω	0Ω	.2Ω	* 1000Ω	* 1000Ω	82Ω		
V4	6AU6	1.4 Meg.	0Ω	0Ω	.2Ω	* 1000Ω	* 1000Ω	82Ω		
V5	6AU6	3.5Ω	0Ω	.2Ω	0Ω	* 1000Ω	* 1000Ω	150Ω		
V6	6AL5	1000Ω	8.2KΩ	0Ω	.2Ω	.1Ω	0Ω	680KΩ		
V7	6AU6	1 Meg.	0Ω	.2Ω	0Ω	** 12KΩ	** 4.7KΩ	33Ω		
V8	6AU6	1Ω	0Ω	.2Ω	0Ω	** 6.8KΩ	** 6.8KΩ	82Ω		
V9	6AL5	10KΩ	10KΩ	.2Ω	0Ω	Inf.	0Ω	Inf.		
V10	6SQ7	0Ω	4.7 Meg.	0Ω	0Ω	0Ω	** 500KΩ	.2Ω	0Ω	
V11	6AS5	40KΩ	280KΩ	.2Ω	0Ω	280KΩ	** 130Ω	** 350Ω		
V12	6SN7GT	2.7 Meg.	* 1 Meg.	0Ω	1.7 Meg. 680KΩ	**6 Meg. **3.8Meg	0Ω	.2Ω	0Ω	
V13	6SN7GT	10KΩ	** 12KΩ	0Ω	33KΩ 10KΩ	**17KΩ **430Ω	200Ω	0Ω	.2Ω	
V14	6SL7GT	10 Meg.	** 35 Meg.	0Ω	10 Meg.	**25Meg.	0Ω	0Ω	.2Ω	
V15	6V6GT	0Ω	.2Ω	** 150Ω	** 6KΩ	180KΩ	140Ω	0Ω	100Ω	
V16	1B3GT	Inf.	42Meg.	Inf.	Inf.	Inf.	42Meg.	42 Meg.	42 Meg.	** 1000Ω
V17A	5Y3GT	Inf.	130KΩ	Inf.	75Ω	Inf.	70Ω	Inf.	130KΩ	

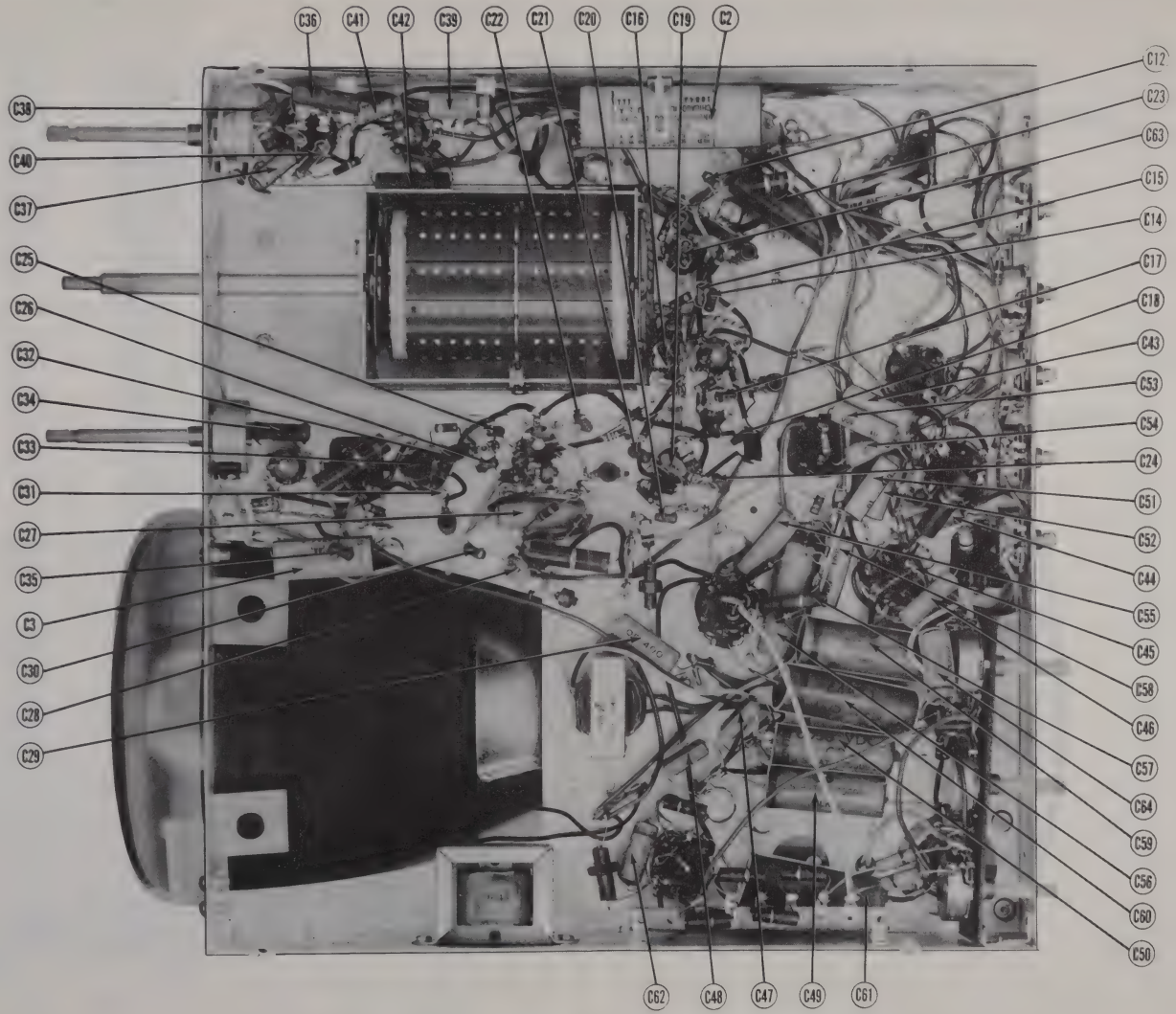
	PINS	1	2	3	5	7	8	9	10	11	14
V18	7JP4	.2Ω	**1.4Meg. **1Meg.	0Ω	** 30Meg.	** 45Meg.	** 45Meg.	** 40Meg.	** 45Meg.	** 45Meg.	0Ω

* Measured from pin 1 of V11
** Measured from pin 8 of V17

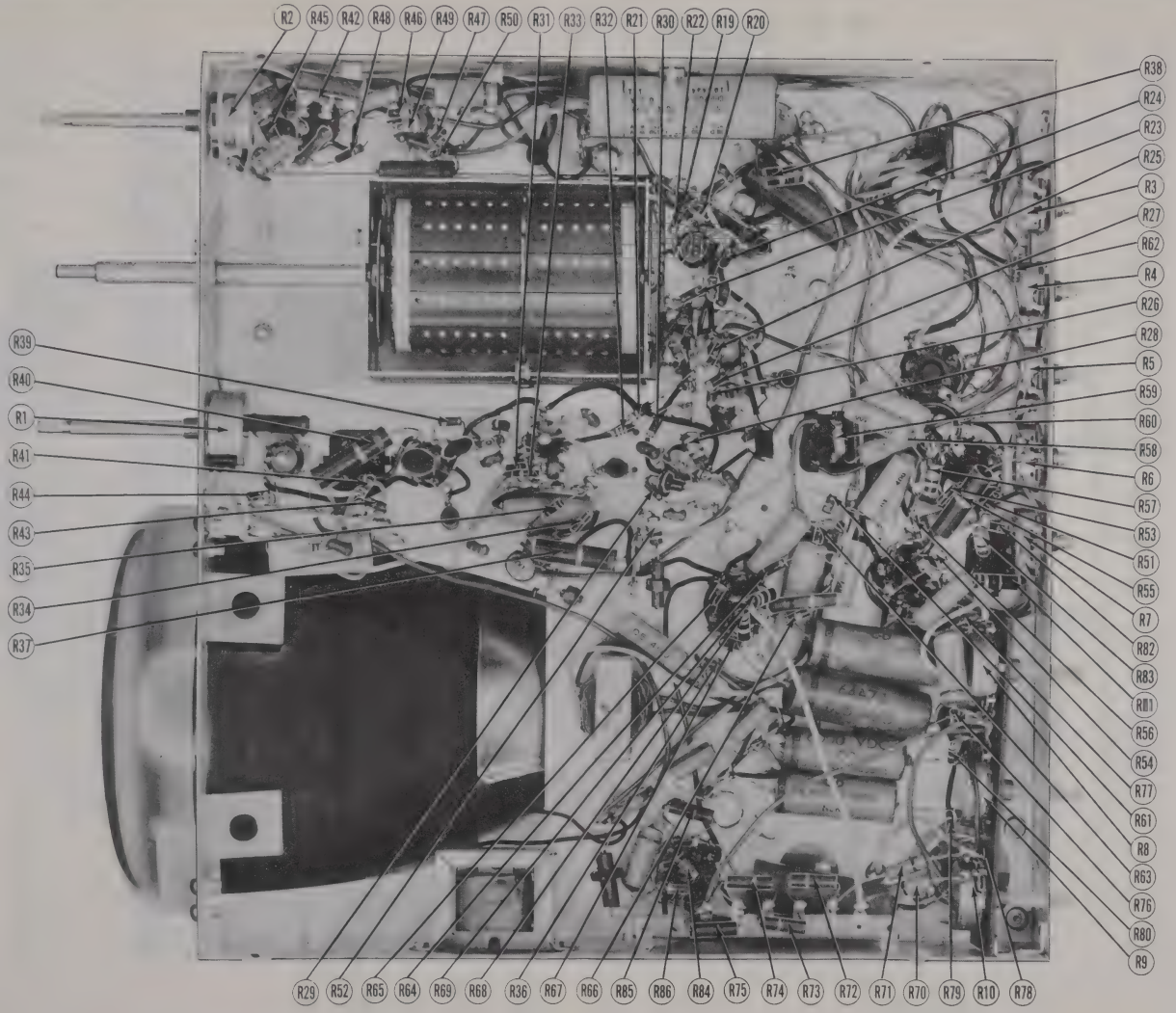
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at maximum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



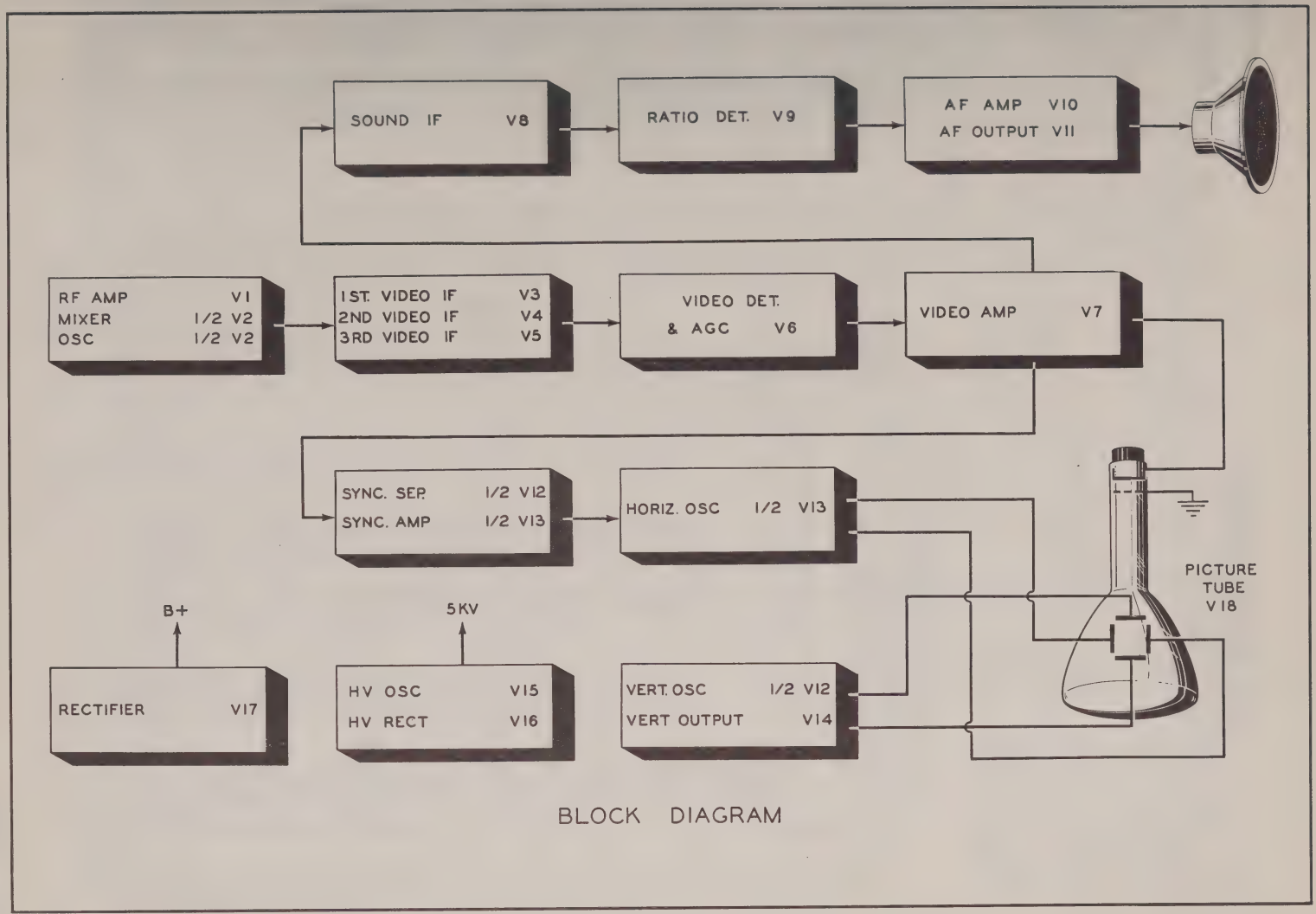
RF TUNER-RIGHT SIDE



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



BLOCK DIAGRAM

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AG5	6AG5	7BP	
V2	Converter	6A8	6A8	7BK	
V3	1st Video IF	6AU6	6AU6	7BR	
V4	2nd Video IF	6AU6	6AU6	7BR	
V5	3rd Video IF	6AU6	6AU6	7BR	
V6	Video Det. Asc	6AL5	6AL5	6BT	
V7	Video Amp.	6AU6	6AU6	7BR	
V8	Sound IF	6AU6	6AU6	7BR	
V9	Ratio Det.	6AL5	6AL5	6BT	
V10	AF Amp.	6S7	6S7	8Q	
V11	Audio Output	6A8C	6A8	7CV	
V12	Sync. Sep.-Vert. Osc.	6SN7GT	6SN7GT	8BD	
V13	Sync. Amp.-Horiz. Osc.	6SN7GT	6SN7GT	8BD	
V14	Vert. Output	6SJ7/U7	6SL7GT	9BD	
V15	HV Osc.	6V6GT	6V6GT	7AC	
V16	HV. Rect.	1B3GT	1B3GT	3Q	
V17 A	LV Rect.	5Y3GT	5Y3GT	5T	
V17 B	LV Rect.	5U4G	5U4G	5T	
V18	Picture Tube	7JP4	7JP4	ST	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	35	67C7-13	AF4444J‡	UFX54S			▲ Filter
C1B	30	350			BR2035			■ "
C1C	20	350						▲ Low pass Filter
C1D	8	150	67A10	PRSA150/50-S0	EDL5315		TA-530	Yellow Filter
C2A	8	150						Red "
C2B	4	150	67A4-2	PRS150/4	BR415		UT-41	Stabilizing Cap
C3	5		98A5-22					Fixed Trimmer ± .5MMF
C4	.0001		98A45-23					RF Fil. Bypass
C5	.05		98A45-25					RF Decoupling
C6	.05		98A45-26					" " Coupling
C7	.05		98A45-27					Osc. Grid Cap.
C8	15		98A45-28					Fixed Trimmer
C9	.05		98A45-24					RF Decoupling
C10	.05		98A45-24					Mixer Fil. Bypass
C11	.1		68C7-1	1468-001	1W5D1	MW.5-21	1FM-21	AGC Filter
C12	.0001		98A5-41	1468-301	1W5J1	MW.5-21	1FM-21	" "
C13	.0001		98A5-41	1468-301	1W5J1	MW.5-21	1FM-21	1st IF Decoupling
C14	.0001		98A5-41	1468-301	1W5D1	MW.5-21	1FM-21	IF Coupling
C15	.0001		98A5-41	1468-301	1W5D1	MW.5-21	1FM-21	AGC Filter
C16	.0001		98A5-41	1468-301	1W5D1	MW.5-21	1FM-21	2nd IF Decoupling
C17	.0001		98A5-41	1468-301	1W5D1	MW.5-21	1FM-21	IF Coupling
C18	.0001		98A5-41	1468-301	1W5D5	MW.5-26	1FM-26	3rd IF Cath. Bypass
C19	.0001		98A5-41	1468-301	1W5D5	MW.5-21	1FM-21	" " Decoupling
C20	.0001		68C6-41	1468-001	1W5D5	MW.5-21	1FM-21	IF Coupling
C21	.22		68B6-66	1468-0001	5W5T5	MO.5-21	1FM-21	" "
C22	.22	200	68B6-58	P468-25	CT2F25	ST-2-25	TC-2	AGC Filter
C23	.005		64B6-41	1468-001	1W5D5	MW.5-21	1FM-21	Filament Bypass
C24	.05		65B6-61	1468-000005	5W5V5	MO.5-56	MS-55	RF Bypass
C25	.05		65B6-41	1468-001	1W5D1	MW.5-21	1FM-21	" "
C26	.1	200	64B5-30	P288-1	CT2F1	ST-2-1	TM-1	Video Coupling
C27	.0001		98A5-42	1467-005	1D5D5	MW.5-25	1FM-25	V. Amp. Screen Bypass
C28	.0001		98A5-25	P468-25	GT4S5	ST-4-05	TM-15	Video Coupling
C29	.02		65B6-58					3. IF Coupling ± 5
C30	.75		98A47-1	1469-000075	5R5Q7	MO5.5-47	MS-47	Fixed Trimmer ± 10%
C31	.0005		68A10-1	1467-005	1D5D5	MW.5-25	1FM-25	Sound IF Cath. Bypass
C32	.0005		68A10-1	1467-005	1D5D5	MW.5-25	1FM-25	" " "
C33	.1		65B6-59					Fixed Trimmer ± 5%
C34	.005		65B6-6	1468-0005	5W5T5	MO.5-36	1FM-36	Diode Load Cap
C35	.005	600	64B5-14	P688-002	GT6S2	ST-6-002	TM-22	De-emphasis
C36	.005	600	64B5-12	P688-005	GT6S5	ST-6-005	TM-25	Audio Coupling
C37	.005	600	64B5-2	P688-005	GT6S5	ST-6-005	TM-25	" "
C38	.005	600	64B5-2	P488-25	GT4S5	ST-4-05	TM-15	AF Plate Decoup.
C39	.25	200	68B6-41	1468-31C25	5W5T25	MO.5-325	1FM-325	" " Bypass *
C40	.005	600	64B5-2	P688-005	GT6S5	ST-6-005	TM-25	Audio Coupling
C41	.05	400	64B5-22	P488-52	GT4S5	ST-4-05	TM-15	Output Plate Bypass
C42	.05	400	64B5-22	P488-25	GT4S5	ST-4-05	TM-15	Video Coupling
C43	.05	400	64B5-22	P488-25	GT4S5	ST-4-05	TM-15	Sync.
C44	.05		65B6-4	1469-00005	5R5Q5	MO5.5-45	MS-45	" " Coupling ± 5%
C45	.1	400	64B5-25	P488-01	GT4S1	ST-4-01	TM-11	Hor. Osc. Grid Cap.
C46	.1	600	65B1-56	1468-001	1W5D1	MW.5-21	1FM-21	Fixed Trimmer
C47	.1	600	65B1-56	1468-001	1W5D1	MW.5-21	1FM-21	Hor. Discharge
C48	.1	1000	64A7-2	5089 M-001	DST6G0D1	STM-60-001	TVM-216	" Coupling
C49	.1	1000	64A7-2	5089M-001	DST6G0D1	STM-60-001	TVM-216	" "
C50	.01	400	64B5-25	P488-01	GT4S1	ST-4-01	TM-11	Integrator Net.
C51	.01	400	64B5-25	P488-01	GT4S1	ST-4-01	TM-11	" "
C52	.01	400	64B5-25	P488-01	GT4S1	ST-4-01	TM-11	" "
C53	.01	400	64B5-25	P488-01	GT4S1	ST-4-01	TM-11	" "
C54	.05	400	64B5-22	P488-05	GT4S5	ST-4-05	TM-15	Vert. Osc. Grid
C55	.05	400	64B5-22	P488-05	GT4S5	ST-4-05	TM-15	Vert. Coupling
C56	.1	600	64B5-5	P688-1	GT6P1	ST-6-1	TM-1	" " Discharge
C57	.05	600	65B6-60	1469-0001	5R5T1	MO5.5-31	MS-31	Vert. Coupling ± 5%
C58	.1	600	65A13-2	P688-024	GT6S4	ST-6-004	TM-24	Voltage Divider
C59	.1	1000	64A7-1	5089M-005	DST6G0D5	STM-60-005	TVM-256	Vert Coupling
C60	.1	1000	64A7-1	5089M-005	DST6G0D5	STM-60-005	TVM-256	" "
C61	.1	1000	64A7-1	5089M-005	DST6G0D5	STM-60-005	TVM-256	HV Filter
C62	.05	400	64B5-22	P488-25	GT4S5	ST-4-05	TM-15	HV Osc. Decoupling
C63	.1		68B6-41	1468-001	1W5D1	MW.5-21	1FM-21	Filament Bypass
C64	.05	600		P688-05	GT6S5	ST-6-05	TM-15	Centering Cont. Bypass †
C65	.1	600	65A47-2					Fixed Trimmer ± 2%

* Some models use 1000 MMF in this application.
† Not used in all models.
‡ Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESIST-ANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1	1000Ω	1	75A14-1			Contrast Control
R2A	1 Meg.	½	75B1-27	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	L	KBS-3	Attach to R2A Per Instructions
C	Switch		Not Req.	41	SW-A	" " " "
R3A	1 Meg.	½	75A13-6	D11-137	M-61-S	Brightness Control
B	Shaft		Not Req.	A	Not Req.	Attach to R3A Per Instructions
R4A	5 Meg.	½	75A13-4	D11-141		Vert. Size Control
B	Shaft		Not Req.	A		Attach to R4A Per Instructions
R5A	1 Meg.	½	75A13-5	D11-137	M-61-S	Vert. Hold Control
B	Shaft		Not Req.	A	Not Req.	Attach to R5A Per Instructions
R6	20KΩ	½	75A13-5		M-36-S	Horiz. Size Control
R7	20KΩ	½	75A13-5		M-36-S	Horiz. Hold Control
R8	2 Meg.	½	75B2-11			Vert. Centering Control Tapped @ 1 Meg.
R9	2 Meg.	½	75B2-11			Horiz. " " " "
R10	2.5 Meg	½	75B1-28			Focus Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES: All resistors are ± 10% unless otherwise stated.	
R11	3900Ω	½	98A45-16	BTS-3900	Or.-White-Red	RF Grid Shunt
R12	47KΩ	½	98A45-17	BTS-47K	Y1.-Vi.-Or.	" Grid
R13	10KΩ	½	98A45-18	BTS-10K	Br.-Blk.-Or.	RF Coil Shunt
R14	2200Ω	½	98A45-19	BTS-2200	Red-Red-Red	" Decoupling
R15	10KΩ	½	98A45-18	BTS-10K	Br.-Blk.-Or.	Osc. Grid
R16	4700Ω	½	98A45-20	BTS-4700	Y1.-Vi.-Red	" Plate Load
R17	4700Ω	½	98A45-20	BTS-4700	Y1.-Vi.-Red	Mixer Grid
R18	220KΩ	½	98A45-21	BTS-220K	Red-Red-Yl.	" "
R19	220Ω	½	60B8-221	BW-½-220	Red-Red-Br	AGC Network
R20	220Ω	½	60B8-221	BW-½-220	Red-Red-Br.	" "
R21	560KΩ	½	60B8-564	BTS-560K	Grn.-Blue-Yl.	" "
R22	10KΩ	½	60B7-103		Br.-Blk.-Or.	1st Video IF Grid 5%
R23	82Ω	½	60B28-31		Gray-Red-Blk.	" " " Cathode
R24	1000Ω	½	60B8-102	BTS-1000	Br.-Blk.-Red	" " " Decoupling
R25	10KΩ	½	60B7-103		Br.-Blk.-Or.	2nd " " Grid 5%
R26	82Ω	½	60B28-31		Gray-Red-Blk.	" " " Cathode
R27	1000Ω	½	60B8-102	BTS-1000	Br.-Blk.-Red	" " " Decoupling
R28	10KΩ	½	60B7-103		Br.-Blk.-Or.	3rd " " Grid 5%
R29	150Ω	½	60B8-151		Br.-Grn.-Br.	" " " Cathode
R30	1000Ω	½	60B8-102	BTS-1000	Br.-Blk.-Red	" " " Decoupling
R31	680KΩ	½	60B8-684	BTS-680K	Blue-Gray-Yl.	AGC Diode Load
R32	39KΩ	½	60B8-393	BTS-39K	Or.-White-Or.	Voltage Divider
R33	8200Ω	½	60B8-822	BTS-8200	Gray-Red-Red	Video Det. Load
R34	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn.	" Amp. Grid
R35	33Ω	½	60B28-30		Or.-Or.-Blk.	" " Cathode
R36	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn.	Picture Tube Cathode
R37	8200Ω	2	60B28-28	BT-2-8200	Gray-Red-Red	Video Amp. Plate
R38	4700Ω	2	60B28-25	BT-2-4700	Y1.-Vi.-Red	" "
R39	82Ω	½	60B28-31		Gray-Red-Blk.	Sound IF Cathode
R40	6800Ω	2	60B28-27	BT-2-6800	Blue-Gray-Red	" " " Decoupling
R41	39Ω	½	60B8-391	BTA-390	Or.-White-Br.	balancing
R42	33KΩ	½	60B8-333	BTS-33K	Or.-Or.-Or.	De-emphasis
R43	10KΩ	½	60B7-103	BTS-10K-5%	Br.-Blk.-Or.	Ratio Det. Load 5%
R44	10KΩ	½	60B7-103	BTS-10K-5%	Br.-Blk.-Or.	" " " 5%
R45	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	Yl.-Vi.-Grn.	AF Grid
R46	270KΩ	½	60B8-274	BTS-270K	Red-Vi.-Yl.	" Plate Load
R47	220KΩ	½	60B8-224	BTS-220K	Red-Red-Yl.	" " Decoupling
R48	560KΩ	½	60B7-564	BTS-560K	Grn.-Blue-Yl.	Output Grid 5%
R49	470KΩ	½	60B7-474	BTS-470K	Yl.-Vi.-Yl.	Voltage Divider 5%
R50	680Ω	1	60B14-181	BW-1-180	Br.-Gray-Br.	Filter See Note 1
R51	2.7 Meg.	½	60B8-275	BTS-2.7 Meg.	Red-Vi.-Grn.	Sync. Sep. Grid
R52	10KΩ	½	60B7-103	BTS-10K-5%	Br.-Blk.-Or.	Phase Correction 5%
R53	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn.	Sync. Sep. Plate
R54	10KΩ	½	60B8-103	BTS-10K-5%	Br.-Blk.-Or.	" " Amp. Grid 5%
R55	12KΩ	2	60B20-123	BTS-12K	Br.-Red-Or.	" " Plate
R56	100KΩ	½	60B8-104	BTS-100K	Br.-Blk.-Yl.	Integrator Network See Note 5
R57	10KΩ	½	60B7-103	BTS-10K-5%	Br.-Blk.-Or.	" " " 5%
R58	6800Ω	½	60B8-682	BTS-6800	Blue-Gray-Red	" " "
R59	47KΩ	½	60B8-473	BTS-47K	Yl.-Vi.-Or.	Vert. Osc. Coil Shunt See Note 2
R60	680KΩ	½	60B8-684	BTS-680K	Blue-Gray-Yl.	" " Grid See Note 3
R61	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn.	" " Plate See Note 4
R62	2.7 Meg.	½	60B8-275	BTS-2.7 Meg.	Red-Vi.-Grn.	Voltage Divider Network See Note 2
R63	10 Meg.	½	60B8-106	BTS-10 Meg.	Br.-Blk.-Blue	Feedback
R64	10 Meg.	½	60B8-106	BTS-10 Meg.	Br.-Blk.-Blue	" "
R65	10 Meg.	½	60B8-106	BTS-10 Meg.	Br.-Blk.-Blue	Vert. Output Grid
R66	100KΩ	½	60B8-104	BTS-100K	Br.-Blk.-Or.	" "
R67	10 Meg.	½	60B8-106	BTS-10 Meg.	Br.-Blk.-Blue	" " "
R68	4.7 Meg.	1	60B14-475		Y1.-Vi.-Grn.	" " Plate
R69	4.7 Meg.	1	60B14-475		Y1.-Vi.-Grn.	" " "
R70	1 Meg.	1	60B28-24	BTA-1 Meg.	Br.-Blk.-Grn.	Voltage Divider
R71	1 Meg.	1	60B28-24	BTA-1 Meg.	Br.-Blk.-Grn.	" "
R72	2.2 Meg.	1	60B28-25		Red-Red-Grn.	" "
R73	2.2 Meg.	1	60B28-25		Red-Red-Grn.	" "
R74	2.2 Meg.	1	60B28-25		Red-Red-Grn.	" "
R75	2.2 Meg.	1	60B28-25		Red-Red-Grn.	" "
R76	4.7 Meg.	1	60B28-29		Red-Red-Grn.	Vert. Deflection Load
R77	4.7 Meg.	1	60B28-29		Y1.-Vi.-Grn.	" " "
R78	10KΩ	½	60B8-103	BTS-10K-5%	Br.-Blk.-Or.	Voltage Divider 5%
R79	4.7 Meg.	1	60B28-29		Y1.-Vi.-Grn.	Horiz. Deflection Load
R80	4.7 Meg.	1	60B28-29		Y1.-Vi.-Grn.	" " "
R81	39KΩ	1	60B14-393	BTA-39K	Or.-White-Or.	" "
R82	39KΩ	½	60B8-393	BTS-39K	Or.-White-Or.	Osc. Coil Shunt
R83	10KΩ	½	60B8-103	BTS-10K-5%	Br.-Blk.-Or.	" " " Grid 5%
R84	180KΩ	½	60B8-184	BTS-180K	Br.-Gray-Yl.	HV Osc. Grid
R85	100Ω	1	60B14-101	BW-1-100	Br.-Blk.-Br.	" " Cathode
R86	560Ω	1	60B14-561	BTS-5600	Grn.-Blue-Red	" " Screen

Note 1. Some models use 2 390Ω resistors in parallel. IRC replacement BW-½-390.
Note 2. Not used in early production.
Note 3. Early Production uses A 470KΩ resistor in this application.IRC replacement BTS-470K.
Note 4. Early production uses 4.7 Meg. resistor in this application.IRC replacement BTS-4.7 Meg.
Note 5. Early production uses 47KΩ resistor in this application.IRC replacement BTS-47K.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ADMIRAL PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
T1	117VAC @ .85A	500VAC CT @ 120MADC	5VAC @ 2A	6.4VAC @ 6.3A	80B13*			

* See production changes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: ADMIRAL PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	NOTES
T2	50Ω	150Ω	69B70				Hor. Block Osc. Trans.
T3	50Ω	150Ω	69B70				Vert. " " "
T4	250Ω	200Ω	79B15				Hor. Sweep Push-Pull Trans.

TRANSFORMER (HIGH VOLTAGE)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC. 1	REPLACEMENT DATA: ADMIRAL PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	NOTES
T5	5Ω	1000Ω @ 2mA; 2000Ω @ 0Ω	69B64				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
T6	3000Ω	3.3Ω	250Ω	.3Ω	79A13			T22S45	

SPEAKER

ITEM No.	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: ADMIRAL PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
SP1	PM	3.2Ω	78B40	ST-107 MOD.P5-W or ST-105 MOD.P5-X	5A15	
SP2	CONE DIA. 4 3/4"	V. C. DIA. 9/16"				

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (@ CURRENT 1000 uA)	REPLACEMENT DATA: ADMIRAL PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	INSTALLATION NOTES
L1	.115A	130Ω	4.2H	74A13	C-2303		C-2991	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	MEISSNER PART No.	NOTES
L2	Ant. Coils	0Ω				
L3	Fil. Choke	0Ω		98A45-13		L2 and L4 are supplied only in matched pairs under part number 98A45 with channel number added as suffix , except channel 13. Channel 13 part number is 98A45-43
L4	RF. Mixer Grid & Osc. Coils.	0Ω				
L5	Fil. Choke	0Ω		98A45-14		
L6	1st Video IF Coil	0Ω		98A47-3		
L7	2nd Video IF Coil	.1Ω		72A59-1		
L8	3rd Video IF Coil	.1Ω		72A59-1		
L9	IF Grid Coil	3.5Ω		AA139-4		
L10	IF Plate Coil	3.5Ω		AA139-4		
L11	4th Video IF Coil	.1Ω		72A59-1		
L12	Peaking Coil	8Ω		AA139-7		145 Microheneries wound on a 33KΩ resistor.
L13	Peaking Coil	16Ω		AA139-8		516 Microheneries wound on a 8.2KΩ resistor
L14	Peaking Coil	12Ω		AA139-9		520 Microheneries wound on a 33KΩ resistor.
L15	Peaking Coil	17Ω		AA139-6		
L16	1st Sound IF	1Ω		72A50-1		
L17	Ratio Det.	3.5Ω	.3Ω	72B68		
L18	Fil. Choke	.1Ω		73A2-2		
L19	RF Choke	15Ω		AB103-1		

ADMIRAL CHASSIS 19A1

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M1	Tuner Assy.	94C8-1	
	Socket	88A5-6	Speaker
	Socket	87B26-1	Picture Tube
	Plug	89A22-2	AC Interlock
	Terminal Strip	10A6-2	Antenna
	Escutcheon	23C34	Plastic, (Picture Tube)
	"	23B38	For Model #19A11 with Tuner 94C8-1
	"	23B38-1	" " #19A12 " " "
	"	23B43	" " #19A15 " " "
	Knob	33A13-4	Contrast or Volume for Models #19A11 and 19A15
	"	33A13-5	" " " " Model #19A12
	"	33C28-13	Channel, for Models #19A11 and 19A15
	"	33C28-31	" " " #19A12
	"	33C28-33	Sharp Tuning for Model 19A11
	"	33C28-34	" " " " 19A12
	"	33C28-14	" " " " 19A15
	Cabinet	34D23	Plastic Mahogany for Model #19A11
	"	34D23-1	Plastic Ebony for Model 19A12
	"	35E94	Wood Walnut for Model 19A15

PRODUCTION CHANGES

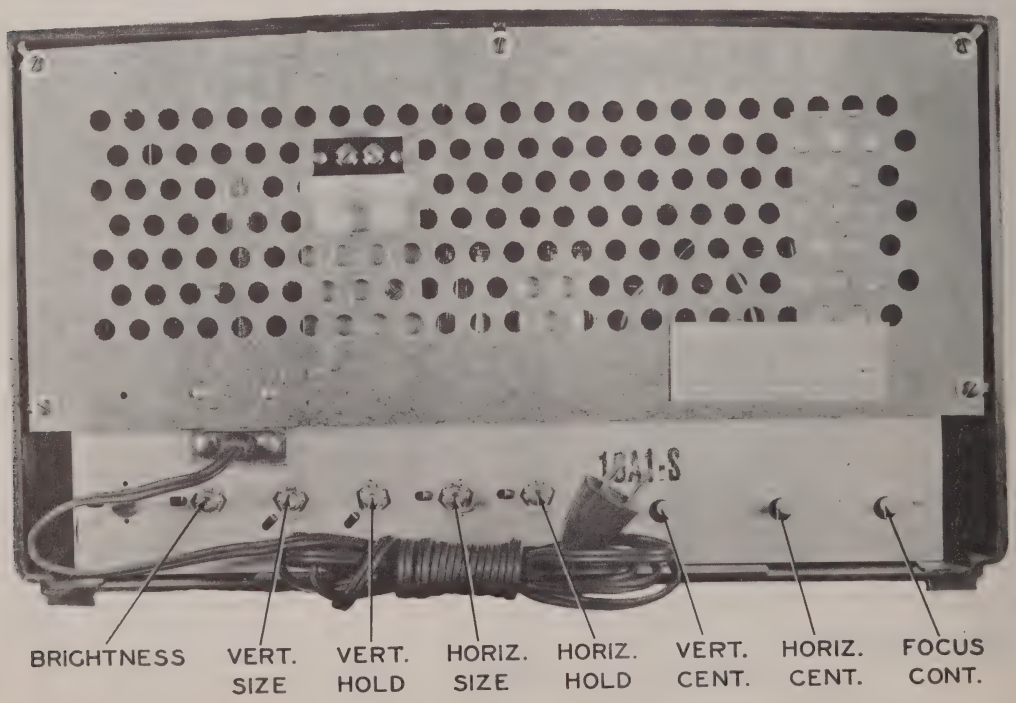
VERTICAL OSCILLATOR CHANGE

Early production had the vertical oscillator circuit wired differently than shown on the schematic. R56 was 47KΩ instead of 100K. R58 and C53 were interchanged and R59 was not used. If difficulty is experience in this circuit it can be changed to conform with circuit on the schematic.

POWER TRANSFORMER AND RECTIFIER

A small number of receivers incorporated a power transformer designed electrically to be used with a 5U4G rectifier tube. These transformers were marked with a red dot on the lamination. When servicing the rectifier tube or power transformer care should be taken that the proper tube is used. If a 5U4G is used with a transformer designed for 5Y3GT operation, the filament current drain will exceed the rated current of the transformer. If a 5Y3GT tube is used with a transformer designed for 5U4G operation, the rectified B+ voltage will be low due to the greater internal drop in the 5Y3GT.

To determine which tube is to be used with the transformer, measure the DC resistance of the high voltage winding between pins #4 and #6 of the rectifier tube. A reading of 175 ohms indicates a transformer designed for use with a 5Y3GT, while a reading of 150 ohms indicated a transformer to be used with a 5U4G.



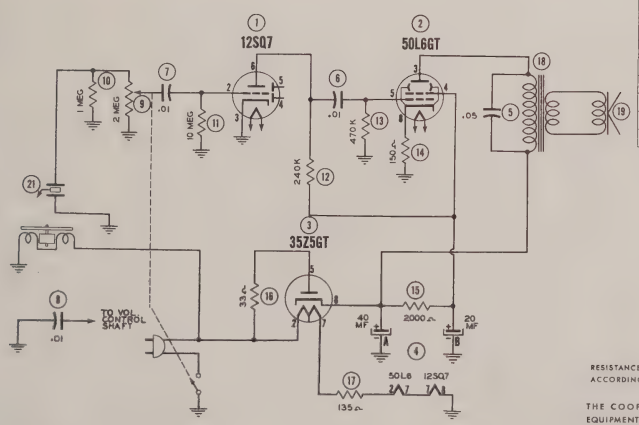
CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove five screws holding back cover. Remove back cover.
3. Remove four 9/32" hex head screws from bottom of chassis.
4. Pull chassis half way out and remove speaker plug from top of chassis. Remove chassis.

AIRCASTLE MODEL 10022-1

TRADE NAME	Aircastle, Models 10021-1, 10022-1
SUPPLIER	Spiegel Inc., 1061 W. 35th St., Chicago, Illinois.
TYPE SET	AC Operated Phono Player with 3 Tube Amplifier.
TUBES (THREE)	Types 12SQ7GT AF Amp., 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY RATING	110-120 Volts AC. .23 Amp. @ 117 Volts AC.



Pin No.	12SQ7GT Volt.	12SQ7GT Res.	50L6GT Volt.	50L6GT Res.
1	0V	0Ω	0V	Inf.
2	-.7VDC	10 Meg.	60VAC	60Ω
3	0V	0Ω	122VDC	120KΩ
4	0V	Inf.	124VDC	120KΩ
5	0V	Inf.	0V	470KΩ
6	75VDC	340KΩ	0V	Inf.
7	12VAC	12Ω	12VAC	12Ω
8	0V	0Ω	7VLC	150Ω

Pin No.	35Z5GT Volt.	35Z5GT Res.
1	0V	Inf.
2	117VAC	24Ω
3	110VAC	225Ω
4	130VDC	120KΩ
5	115VAC	27Ω
6	0V	Inf.
7	85VAC	190Ω
8	130VDC	120KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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497-3

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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AIRCASTLE
MODEL 10021-1, 10022-1

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Phono Amp.	12SQ7GT	12SQ7GT	8Q	
2	Power Output	50L6GT	50L6GT	7AC	
3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	40	150	CE-K11-4	PRSA 150/40-20	EDL4215	DSB-3X20-150 #	TA-240	Filter. Red.
4B	20	150						" Blue.
5	.05	400	CP-15-5	484-05	GT4S5	ST-4-05	TC-15	Output Plate Bypass.
6	.01	400	CP-11-5	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling.
7	.01	400		484-01	GT4S1	ST-4-01	TC-11	" "
8	.01	300		484-01	GT4S1	ST-4-01	TC-11	Control Isolation *

* Not used in all models.
# Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
9A	2 Meg.	½	VC-205-S	D13-139	M-66-Z	Volume Control.
B	Shaft		Not req.	A	Not req.	Attach to 9A per instructions.
C	Switch		" "	41	SW-A	" " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	IDENTIFICATION CODES	
10	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.	Phono Shunt
11	10 Meg.	½	RC-106-C	BTS-10 Meg.	Br.-Blk.-Blue.	AF Grid.
12	240KΩ	½	RC-224-C	BTS-220K	Red-Yl.-Yl.	AF Plate Load.
13	470KΩ	½	RC-474-C	BTS-470K	Yl.-Vl.-Yl.	Output Grid.
14	150Ω	½	RC-151-C	BW-½-150	Br.-Grn.-Br.	" Cathode.
15	2000Ω	½	RC-222-C	BTS-2200	Red-Blk.-Red.	Filter.
16	33Ω	½	RC-33X-C		Or.-Or.-Blk.	Rectifier Ballast.
17	135Ω	5	RW-135X-H	ABA-150		Line Dropping. See note.

Note: On IRC replacement set slider 135Ω from end.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
18	16000	3.12	134Ω	.4Ω	TOS-20-3	A-3876 †	T22S45 †	A-2928 †	† Drill new mounting holes

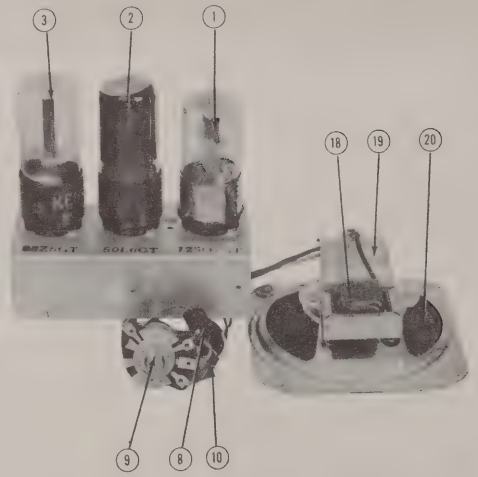
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
19	FIELD	V.C. IMP.	SR-4	ST-113 MOD P4-X	4A07	
	PM	3.1Ω				
20	CONE DIA.	V.C. DIA.				
	4"	9/16"				

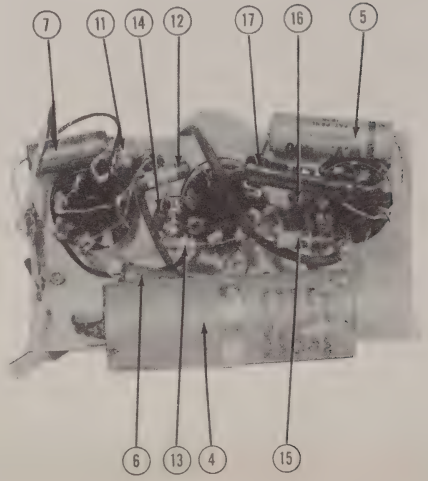
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
21	CC-1	LT-2M	

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



AIRCASTLE
MODEL 139144

AIRCASTLE MODEL 139114

TRADE NAME	Aircastle, Model 139114
SUPPLIER	Spiegel Inc., 1061 W. 35th St., Chicago, Ill.
TYPE SET	Battery Operated Universal Automotive Superheterodyne Receiver
TUBES (SIX)	Types, 6SK7GT RF Amp., 6SA7GT Converter, 6SK7GT IF Amp., 6SQ7GT Det.-AVC-AF, 6V6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	6 Volt Storage Battery
TUNING RANGE—BROADCAST	540-1600KC RATING 5.2 Amp. @ 6.3 Volts DC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) of 6SA7. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	250MMFD	High side to ant. receptacle. Low side to chassis.	"	"	"	A5	Adjust for minimum output.
3	250MMFD	"	1600KC	"	"	A6	Adjust for maximum output.
4	250MMFD	"	1400KC	Tune for maximum output.	"	A7,A8	" " " "
5	250MMFD	"	600KC	"	"	A9	Adjust for maximum output. Repeat Steps 3, 4 & 5 until no further improvement can be made.

After receiver is installed in car, and antenna fully extended, tune in a weak station near 600KC and adjust A8 for maximum volume.

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DATE 4/49 497-4 SET #59 FOLDER 4

PARTS LIST AND DESCRIPTIONS

AIRCASTLE MODEL 139114

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7GT	6SK7GT	8N	
2	Converter	6SA7GT	6SA7GT	8AD	
3	IF Amp.	6SK7GT	6SK7GT	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Power Output	6V6GT	6V6GT	7AC	
6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	30	350	A16-289	AF64K4A	UP2235C*	DY-310	EL-323	■ Filter
B	20	350			BR1235*	M-20-350		▲ "
C	20	25						Cathode Bypass
8	.005	1600	A16-185	1689-.005	MD16D5	STM-16-005	TR-25	Buffer
9	.5	100	A16-184		GT2P5	SHH-1		Hash Filter
10	.5	100	A16-184		GT2P5	SHH-1		" "
11	.01	400	A16-192	484-.01	GT4S1	ST-4-01	TC-11	Output Plate Bypass
12	.05	600	A16-193	684-.05	GT6S5	ST-6-05	TC-15	Audio Coupling
13	.005	600	A16-190	684-.005	GT6D5	ST-6-005	TC-25	" "
14	.2	400	A16-188	484-.2	GT4P2	ST-4-2	TC-2	RF Bypass Pwr. Supply
15	.1	400	A16-187	484-.1	GT4P1	ST-4-1	TC-2	IF Cathode Bypass
16	.1	400	A16-187	484-.1	GT4P1	ST-4-1	TC-2	Screen Bypass
17	.1	400	A16-187	484-.1	GT4P1	ST-4-1	TC-2	RF Cathode Bypass
18	.05	400	A16-189	484-.05	GT4S5	ST-4-05	TC-15	AVC Filter
19	.01	400	A16-192	484-.01	GT4S1	ST-4-01	TC-11	Ant. Coupling
20	250	500	A15-176	1468-00025	5W5T25	MO.5-325	1FM-325	Hash Filter
21	250	500	A15-176	1468-00025	5W5T25	MO.5-325	1FM-325	" "
22	1000	300	A16-191	1468-001	1W5D1	MO.3-21	1FM-21	AF Plate Bypass-Cer.
23	250	500	A15-176	1468-00025	5W5T25	MO.5-325	1FM-325	Diode RF Filter
24	50	300	A15-204	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap.-Cer.
25	10	300		1469-00001	5R5Q1	MO8.5-41	MS-41	Fixed Trimmer-Cer.
26	20	300	A15-202		5R5Q2	MO8.5-42	MS-42	Fixed Padder-Cer.
27	100	300	A15-196	1468-0001	5W5T1	MO.5-31	1FM-31	RF Coupling-Cer.

*Parallel sections to obtain desired capacity.

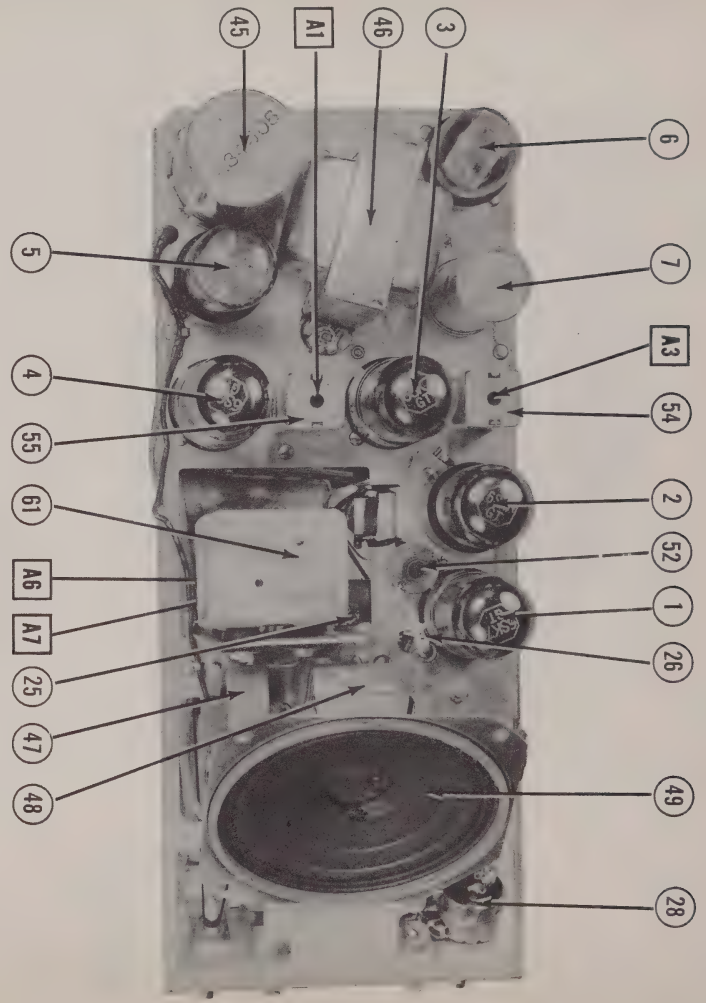
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
28	500KΩ	½	A24-176			Volume Control & Switch

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
29	470Ω	½	A60-722	BTS-470	Yl.-Vi.-Br. RF Cathode
30	22KΩ	½	A60-744	BTS-22K	Red-Red-Or. RF Plate Load
31	47KΩ	½	A60-685	BTS-47K	Yl.-Vi.-Or. Conv. Grid
32	2.2 Meg.	½	A60-726	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
33	22KΩ	½	A60-744	BTS-22K	Red-Red-Or. Oscillator Grid
34	220Ω	½	A60-753	BW-½-220	Red-Red-Br. IF Cathode
35	15KΩ	1	A60-716	BTA-15K	Br.-Grn.-Or. Screen Dropping
36	10 Meg.	½	A60-728	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
37	200KΩ	½	A60-667	BTS-220K	Red-Blk.-Yl. AF Plate Load
38	470KΩ	1	A60-731	BTA-470K	Yl.-Vi.-Yl. Output Grid
39	270Ω	1	A60-754	BW-1-270	Red-Vi.-Br. Output Cathode
40	10KΩ	1	A60-698	BTA-10K	Br.-Blk.-Or. Voltage Dropping
41	470Ω	1	A60-694	BTA-470	Yl.-Vi.-Br. Filter
42	100Ω	½	A60-752	BW-½-100	Br.-Blk.-Br. Hash Supp.
43	100Ω	½	A60-752	BW-½-100	Br.-Blk.-Br. " "
44	2.2 Meg.	½	A60-726	BTS-2.2 Meg.	Red-Red-Grn. AVC Network

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: RADIART PART No.	INSTALLATION NOTES
45	Interrupter	6.3V DC	115 ∿	A34-105	C01	5301	

TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.
46	6.3V DC @ 2.3A	380V CT @ .04A			B80-243			P-2970

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
47	5700Ω	3.5Ω	365Ω	.4Ω	B-80-242	A-3877‡	T22S46‡	A-2930‡	‡Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.		ST-113#		#Fabricate new mounting bracket.
48	PM	3.5Ω	B79-362	Mod. P4-X	4A15#	
	CONE DIA.	VC DIA.				
49	4"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: MEISSNER PART No.
50	Ant. Loading Coil		.3Ω	A10-513	
51	Ant. Coil		4.5Ω	B10-511	
52	IF Trap Coil		5Ω	A10-510	
53	Osc. Coil		6.3Ω	A10-512	14-1060
54	Input IF	22Ω	21Ω	A10-508	16-6668
55	Output IF	18.7Ω	18.7Ω	A10-506	16-6669
56	Hash Choke		0Ω	A33-225	
57	Vib. Choke		0Ω	A33-228	

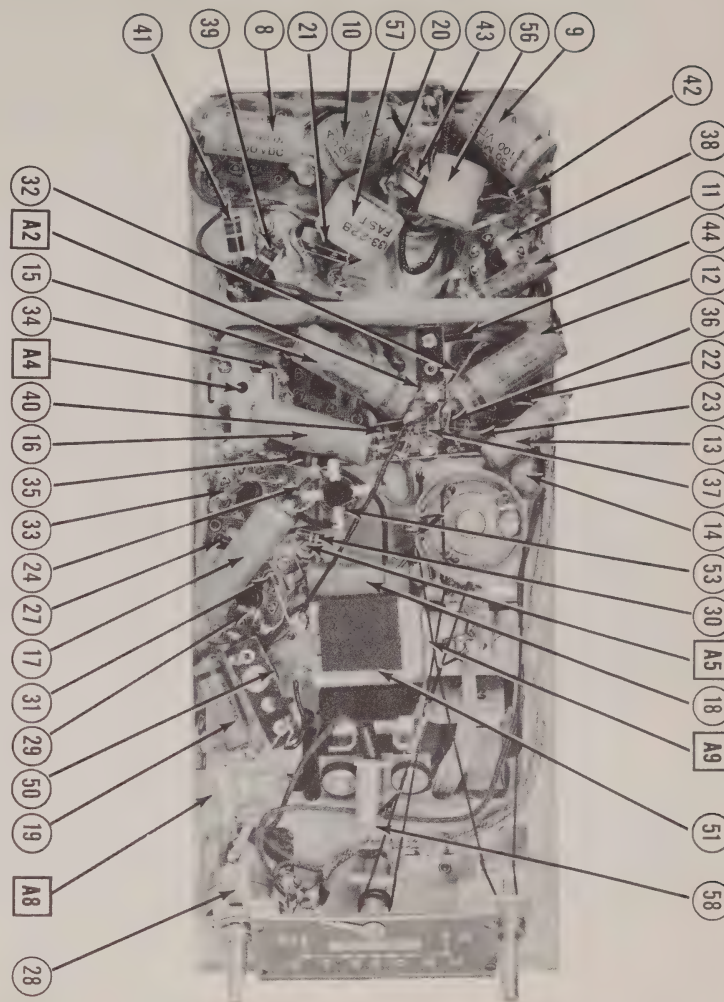
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA	INSTALLATION NOTES
58	Bayonet	6-8	0.4	White			Type 55

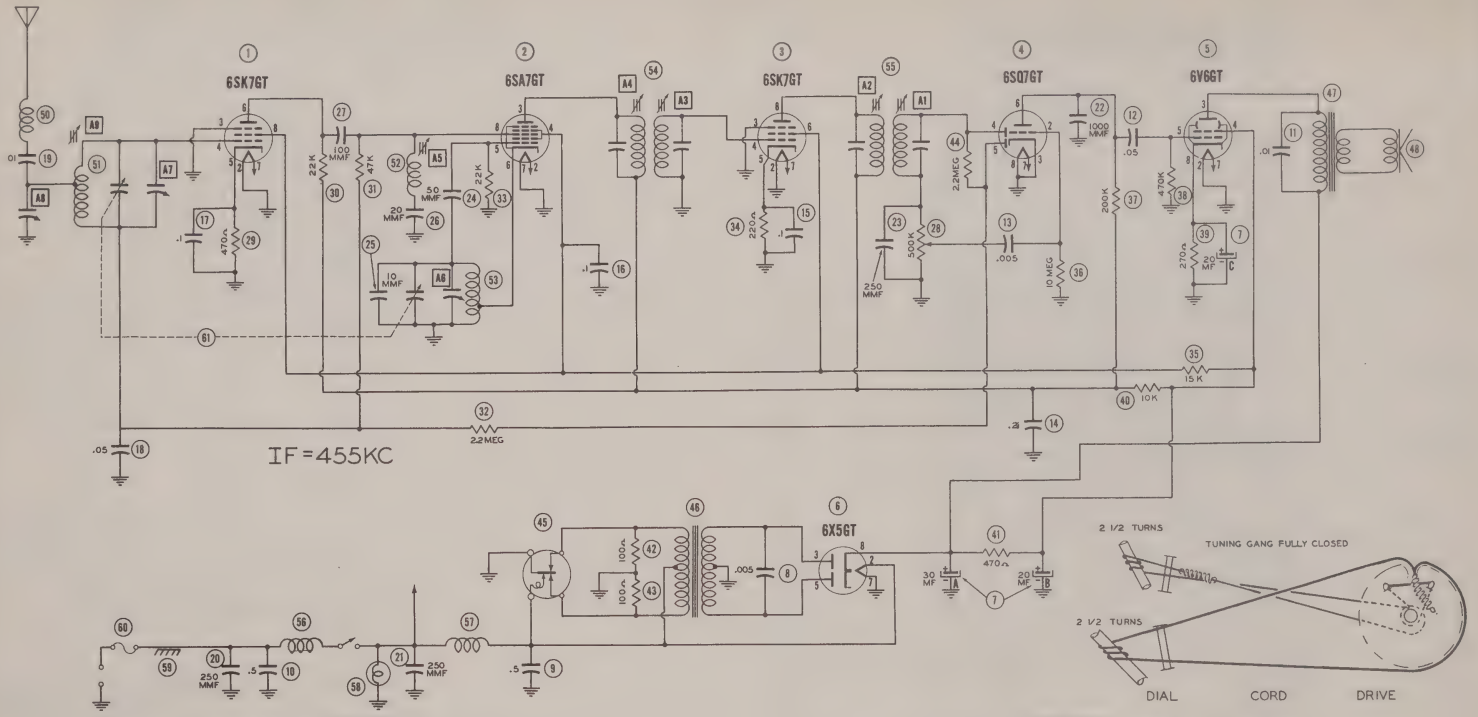
MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
59	Spark Plate		
60	Fuse	A43-10	15 Amp.
61	2 Gang Var. Cap	B19-196	(13-450MMF, 13-178MMF)
A8	Padder	A20-145	Ant. Adj.
	Dial Crystal	A48-43	
	Dial Pointer	A58-55	
	Dial Scale	B67-523	
	Knob	A52-258	

CHASSIS—BOTTOM VIEW



AIRCASTLE MODEL 129114



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0V.	0V.	0V.	-.1VDC	1.8VDC	55VDC	6.3VDC	25VDC
2	6SA7GT	0V.	6.3VDC	90VDC	55VDC	-8.6VDC	0V.	0V.	-.2VDC
3	6SK7GT	0V.	0V.	0V.	0V.	1.3VDC	55VDC	6.3VDC	90VDC
4	6SQ7GT	0V.	-.8VDC	0V.	-.5VDC	-.5VDC	60VDC	6.3VDC	0V.
5	6V6GT	0V.	0V.	175VDC	175VDC	0V.	175VDC	6.3VDC	7.6VDC
6	6X5GT	0V.	6.3VDC	190VAC	0V.	190VAC	0V.	0V.	185VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0Ω	0Ω	0Ω	5 Meg.	470Ω	145KΩ	.1Ω	150KΩ
2	6SA7GT	0Ω	.1Ω	140KΩ	150KΩ	22KΩ	.1Ω	0Ω	5 Meg.
3	6SK7GT	0Ω	0Ω	0Ω	21Ω	220Ω	145KΩ	.1Ω	140KΩ
4	6SQ7GT	0Ω	10 Meg.	0Ω	50KΩ	2.7 Meg.	360KΩ	.1Ω	0Ω
5	6V6GT	0Ω	0Ω	130KΩ	130KΩ	470KΩ	130KΩ	.1Ω	270Ω
6	6X5GT	0Ω	.1Ω	500Ω	0Ω	525Ω	0Ω	0Ω	130KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS. THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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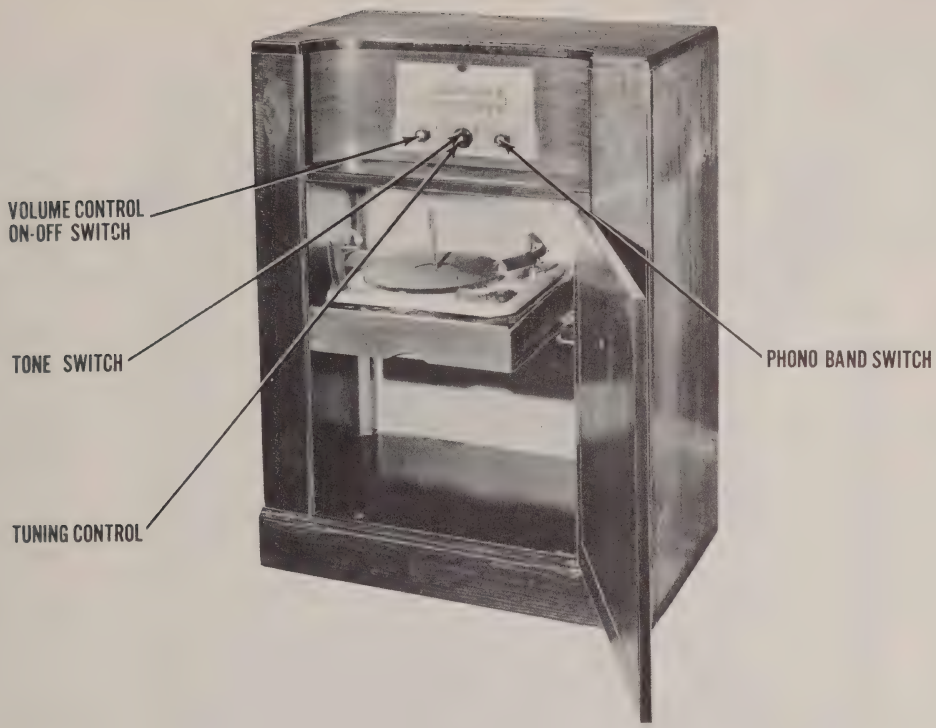
1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

BENDIX
MODELS 75B5, 75M5, 75M8, 75P6, 75W5



BENDIX
MODELS 75B5, 75M5, 75M8, 75P6, 75W5

TRADE NAME	Bendix, Models 75B5, 75M5, 75M8, 75P6, 75W5		
MANUFACTURER	Bendix Radio, Div. of Bendix Aviation Corp., Baltimore, Maryland		
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna. (75P6 AC-DC Operated)		
TUBES(SIX)	Types 12BA6 FM RF Amp., 12AT7 Converter, 12BA6 1st IF Amp., 12BA6 2nd IF Amp., 19T8 DET-AVC-AF, 50L6GT Power Output.		
POWER SUPPLY	110-120 Volts AC	RATING	.34 Amp., @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620KC	FREQ. MOD.	88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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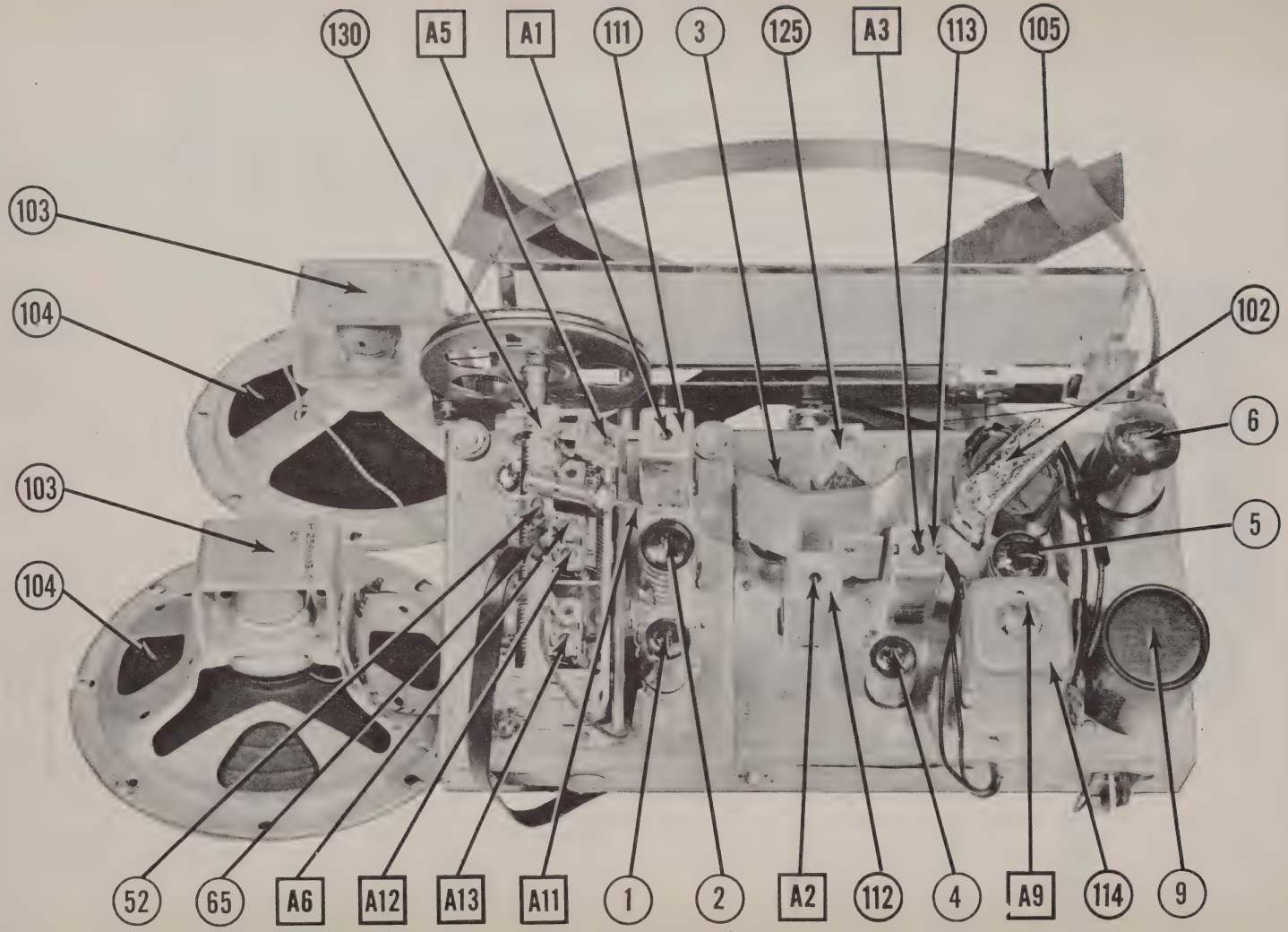
DATE 4/49 497-5 SET #59 FOLDER 5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A5
A1
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A3
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A6
A12
A13
A11
1
2
A2
112
4
A9
114
9

107 55 56 54 85 62 68 72 119 115 92 23 120 78 79 16 91 124 117 77 87 B 30 59 A8 82 86 80 32 26 31
71 49 70 76 51 19 108 48 35 47 66 44 116 110 46 45 50 109 69 42 73 127 41 53 A7 43 40 74 36 39 118 75 18 61 128 94 60 17 33 63 15 38 37 101 93 21 123 67 14 12
A10 29 9 81 13 10 100 25 27 34 28 24 88 95 84 8 129 A 89 98 20 96 90 64 99 11 97 22 121 A4 83

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	12BA6	12BA6	7BK	
2	Converter.	12AT7	12AT7		
3	1st IF Amp.	12BA6	12BA6	7BK	
4	2nd IF Amp.	12BA6	12BA6	7BK	
5	Det.-AVC-AF	19T8	19T8		
6	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	CE4A03	AF886 D4A *	UP7DJ63	DY-419 *	D14560	□ Filter.
7B	30	150		PRS25/25		M-25-25		▲ Filter.
7C	50	150						● Filter.
7D	50	25						Cathode Bypass.
8	5	50	CE1T06	PRS150-4	BR550	M-4-450	TA-55	Stabalizing Cap.
9	.05	400	CP4T40	484-05	GT4S5	ST-4-05	TC-15	Line Filter.
10	.03	400	CP4T36	484-03	GT4S3	ST-6-03	TC-13	" Isolation.
11	.02	400	CP4T34	484-02	GT4S2	ST-4-02	TC-12	Output Plate Bypass.
12	.03	400	CP4T36	484-03	GT4S3	ST-6-03	TC-13	Audio Coupling.
13	.002	600	CP6T12	684-002	GT6D2	ST-6-002	TC-22	De-emphasis.
14	.004	600	CP6T16	684-004	GT6D4	ST-6-004	TC-24	Tone Compensation.
15	.002	600	CP6T12	684-002	GT6D2	ST-6-002	TC-22	" "
16	.1	400	CP4T51	484-1	GT4P1	ST-4-1	TC-1	Phono Isolation.
17	.03	400	CP4T36	484-03	GT4S3	ST-6-03	TC-13	AVC Filter.
18	.03	400	CP4T36	484-03	GT4S3	ST-6-03	TC-13	" "
19	.05	400	CP4T40	484-05	GT4S5	ST-4-05	TC-15	RF Bypass.
20A	5000	300	#	484-005	GT6D5	ST-6-005	TC-25	Audio Coupling.Cer.
20B	220	300		1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass.
21	5000	450	CCOM00	1467-005	1D5D5	MW.5-25	1FM-25	Tone Compensation.Cer.
22	100	500	CC9A34	1468-0001	5W5T1	MO.5-31	1FM-31	" "
23	1000	300	CC9M50	1467-001	1W5D1	MW.5-21	1FM-21	" " "
24	1000	300	CC9M50	1467-001	1W5D1	MW.5-21	1FM-21	RF Bypass. "
25	4.7	300	CCA01B	1468-000005	5W5V5	MO.5-55	MS-55	Compensating Cap. "
26	150	500	CC9A36	1468-00015	5W5T15	MO.5-315	1FM-315	RF Bypass.
27	10000	450	CC9R80	1467-01	1D3S1	MW.3-11	1FM-11	RF Bypass. Cer.
28	10000	450	CC9R80	1467-01	1D3S1	MW.3-11	1FM-11	RF Bypass. "
29	5000	450	CCOM00	1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Decoup. Cer.
30	5000	450	CCOM00	1467-005	1D5D5	MW.5-25	1FM-25	RF Bypass Pwr.Supp.Cer.
31	5000	450	CCOM00	1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Cath. Bypass."
32	470	300	CC9M42	1468-0005	5W5T5	MO.5-35	1FM-35	IF Coupling. Cer.
33	5000	450	CCOM00	1467-005	1D5D5	MW.5-25	1FM-25	1st IF Screen Bypass Cer.
34	5000	450	CCOM00	1467-005	1D5D5	MW.5-25	1FM-25	" " Plate Decoup.Cer.
35	10000	450	CC9R80	1467-01	1D3S1	MW.3-11	1FM-11	RF Bypass. Cer.
36	5000	450	CCOM00	1467-005	1D5D5	MW.5-21	1FM-21	AVC Filter. Cer.
37	10000	450	CC9R80	1467-01	1D3S1	MW.3-11	1FM-11	RF Bypass. "
38	10000	450	CC9R80	1467-01	1D3S1	MW.3-11	1FM-11	RF Bypass. "
39	10000	450	CC9R80	1467-01	1D3S1	MW.3-11	1FM-11	RF Bypass. "
40	470	300	CC9M42	1468-0005	5W5T5	MO.5-35	1FM-35	IF Coupling. "
41	5000	450	CCOM00	1467-005	1D5D5	MW.5-25	1FM-25	Conv. Decoup. Cer.
42	5000	450	CCOM00	1467-005	1D5D5	MW.5-25	1FM-25	Osc. Plate Decoup.Cer.
43	47	300	CC8B30	1469-00005	5R5Q5	MOS.5-55	MS-55	Osc. Grid Cap. "
44	12	300	CC8B23					Fixed Trimmer. Cer.
45	1000	300	CC9M50	1467-001	1W5D1	MW.5-21	1FM-21	RF Bypass. "
46	1000	300	CM5A46	1467-001	1W5D1	MW.5-21	1FM-21	Conv. Cathode Bypass.
47	470	300	CC9M42	1468-0005	5W5T5	MO.5-35	1FM-35	AM RF Coupling. Cer.
48	1000	300	CC9M50	1468-001	1W5D1	MW.5-21	1FM-21	FM RF Coupling. Cer.
49	22	300	CC0A26	1468-000025	5W5Q25	MO.5-425	MS-425	" " " "
50	4.7	300	CC0A18	1469-000005	5R5V5	MOS.5-55	MS-55	Conv. Plate Bypass.Cer.
51	1000	300	CC9M50	1468-001	1W5D1	MW.5-21	1FM-21	RF Bypass. Cer.
52	2.2	500	CC0A14					FM Osc. Coupling. Cer.
53	10000	450	CC9R80	1467-01	1D3S1	MW.3-11	1FM-11	RF Bypass. Cer.
54	220	300	CC9A36	1468-00025	5W5T25	MO.5-325	1FM-325	FM RF Coupling. Cer.
55	1000	300	CC9M50	1468-001	1W5D1	MW.5-21	1FM-21	RF Bypass. Cer.
56	100	500	CC9A34	1468-0001	5W5T1	MO.5-31	1FM-31	Ext.Diode Isolation. Cer.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
102A	2000Ω	1.6Ω	290Ω tap @ 72.	.3Ω	TA0019	A-3330 †		A-3031 †	Used on Model 75M8. †Cut mounting tabs to duplicate original.
102B					TA0016				Used on Models 75B5,75W5, 75M5, 75P6.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
103A	FIELD	V.C. IMP.	SP6R02	ST-110 MOD.P6V	6A21	Two used on model 75M8.
	PM	3.2Ω				
104A	CONE DIA. 5 7/8"	V.C. DIA. 3/4"				
103B	FIELD	V.C. IMP.	SP4002			Used only on Model 75P6.
	PM	3.2Ω				
104B	CONE DIA. 4 X 6"	V.C. DIA. 9/16"				
103C	FIELD	V.C. IMP.	SP8R01			Used on Models 75B5,75W5,75M5 only.
	PM	3.2Ω				
104C	CONE DIA. 7 3/4"	V.C. DIA. 3/4"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: MEISSNER PART No.	
105	AM Loop Ant.		1.3Ω	AL0C09		
106	FM Dipole Ant.		0Ω			
107	FM Ant.Coil		0Ω	LA0F01		
108	FM RF Coil		0Ω	L10F01		
109	AM Osc.Coil	2Ω	6Ω	L07B01	14-1060	
110	FM Osc.Coil		0Ω	L07F00		
111A	1st IF AM		10Ω	T10C12		
111B	1st IF FM		1Ω			
112A	2nd IF AM		9Ω	T10D20		
112B	2nd IF FM		1Ω			
113	AM 3rd IF	10Ω	10Ω	T10D18		
114	Ratio Det.	1Ω	0Ω	T10D17		
115	RF Plate chk		0Ω	LF0A01		
116	Osc.Cath. chk.		0Ω	LF0A01		
117	Fil. Chk.		0Ω	LF0C00		Wound on 100MMF cap.
118	" "		0Ω	LF0A00		
119	" "		0Ω	LF0A00		
120	" "		0Ω	LF0C00		Wound on 100MMF cap.
121	" "		0Ω	LF0A00		
122	Line Choke			LF0A04		Used only in table models.
123	Isolation Choke.		21Ω	LF0A07		
124	RF Filter Choke.			LF0C00		Wound on 100MMF cap.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA	NOTES
125	Screw	120V			C7		

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
57	12	500	CC8B23					Fixed Trimmer.Cer. Note 1.
58	100	500	CC9A34	1468-0001	5W5T1	MO.5-31	1FM-31	Line Ant. Coupling Cer. Note 1.
59	5000	450	CCOM00	1467-005	1D5D5	MW.5-25	1FM-25	Filament Bypass. Cer.
60	5000	450	CCOM00	1467-005	1D5D5	MW.5-25	1FM-25	" " "
61	5000	450	CCOM00	1467-005	1D5D5	MW.5-25	1FM-25	" " "
62	5000	450	CCOM00	1467-005	1D5D5	MW.5-25	1FM-25	" " "
63	5000	450	CCOM00	1467-005	1D5D5	MW.5-25	1FM-25	" " "
64	5000	450	CCOM00	1467-005	1D5D5	MW.5-25	1FM-25	" " "
65	4.7	300	CC0A18	1468-000005	5W5V1	MO.5-55	MB-55	Ext. Ant. Coup. "
66	1000	300	CC9M50	1468-001	1W5D1	MW.5-21	1FM-21	RF Bypass. Cer.Note 2

* Parallel sections to obtain desired capacity.
\# Item # 20A & B and 97A & B are combined into one unit obtainable under Mfgrs. part # ACOC01.
Note 1: Used in Model 75P6 only.
Note 2: Not used in all models.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BENDIX PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
67A	2 Meg.	½	RV4S13	D18-139X	T-116	Volume Control.
B	Shaft		Not Req.	A	Not Req.	Attach to 67A per instructions.
C	Switch		" "	41	SW-A	" " "

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BENDIX PART No.	IRC PART No.	IDENTIFICATION CODES	
68	100KΩ	½	RC22A104M	BTS-100K	Br.-Blk.-Yl.	FM RF Grid.
69	22KΩ	½	RC22A223M	BTS-22K	Red-Red-Or.	Oscillator Grid.
70	100KΩ	½	RC22A104M	BTS-100K	Br.-Blk.-Yl.	Mixer Grid.
71	2.2 Meg.	½	RM2F66	BTS-2.2 Meg.	Red-Red-Grn.	" "
72	3300Ω	½	RC23A332M	BTS-3300	Or.-Or.-Red.	" Cathode.
73	47KΩ	½	RC22A473M	BTS-47K	Yl.-Vi.-Or.	" Plate Decoupling.
74	1 Meg.	½	RC22A105M	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network.
75	1 Meg.	½	RC22A105M	BTS-1 Meg.	Br.-Blk.-Grn.	" "
76	470KΩ	½	RC22A474M	BTS-470K	Yl.-W.-Yl.	Voltage Dropping.
77	1000Ω	½	RC23A102M	BTS-1000	Br.-Blk.-Red.	1st IF Screen Decoupling.
78	470Ω	½	RC23A471M	BTS-470	Yl.-Vi.-Br.	" " Plate "
79	1000Ω	½	RC23A102M	BTS-1000	Br.-Blk.-Red.	Decoupling.
80	470KΩ	½	RC22A474M	BTS-470K	Yl.-Vi.-Yl.	2nd IF Grid.
81	470Ω	½	RC23A471M	BTS-470	Yl.-Vi.-Br.	" " Cathode.
82	470Ω	½	RC23A471M	BTS-470	Yl.-Vi.-Br.	" " Decoupling.
83	47KΩ	½	RC22A473M	BTS-47K	Yl.-Vi.-Or.	Diode Filter.
84	220KΩ	½	RC22A224M	BTS-220K	Red-Red-Yl.	" Load.
85	1 Meg.	½	RC22A105M	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network.
86	33Ω	1			Or.-Or.-Blk.	RF Filter.
87	33KΩ	½	RC22A333M	BTS-33K	Or.-Or.-Or.	De-emphasis.
88	22KΩ	½	RC22A223M	BTS-22K	Red-Red-Or.	Ratio Det. Diode Load.
89	470KΩ	½	RC22A474M	BTS-470K	Yl.-Vi.-Yl.	AVC Network.
90	10 Meg.	½	RC22A106M	BTS-10 Meg.	Br.-Blk.-Blue.	Bias.
91	330KΩ	½	RC22A334M	BTS-330K	Or.-Or.-Yl.	Series Phono. See Note.
92	68KΩ	½	RC22A683M	BTS-68K	Blue-Gray-Or.	Tone Compensation. See Note.
93	100KΩ	½	RC22A104M	BTS-100K	Br.-Blk.-Yl.	" "
94	10 Meg.	½	RC22A106M	BTS-10 Meg.	Br.-Blk.-Blue.	" "
95	10 Meg.	½	RC22A683M	BTS-10 Meg.	Br.-Blk.-Blue.	AF Grid.
96A	250KΩ	½	#	BTS-270K		" Plate Load.
96B	500KΩ	½		BTS-470K		Output Grid.
97	150Ω	½	RC23A151M	BW-½-150	Br.-Grn.-Br	" Cathode.
98	470Ω	1	RC24A471M	BTA-470	Yl.-Vi.-Br.	Filter.
99	470Ω	1	RC24A471M	BTA-470	Yl.-Vi.-Br.	"
100	33Ω	1	RW1F06	BW-1-33	Or.-Or.-Blk.	Surge Limiter.
101	220K	½	RC22A224M	BTS-220K	Red-Red-Yl.	Line Isolation.

Note: Not used in table Model 75P6.
\# Items 96A & B and 20A & B are combined into one unit obtainable under part #ACOC01.

DATE 4/49 497-5 SET #59 FOLDER 5

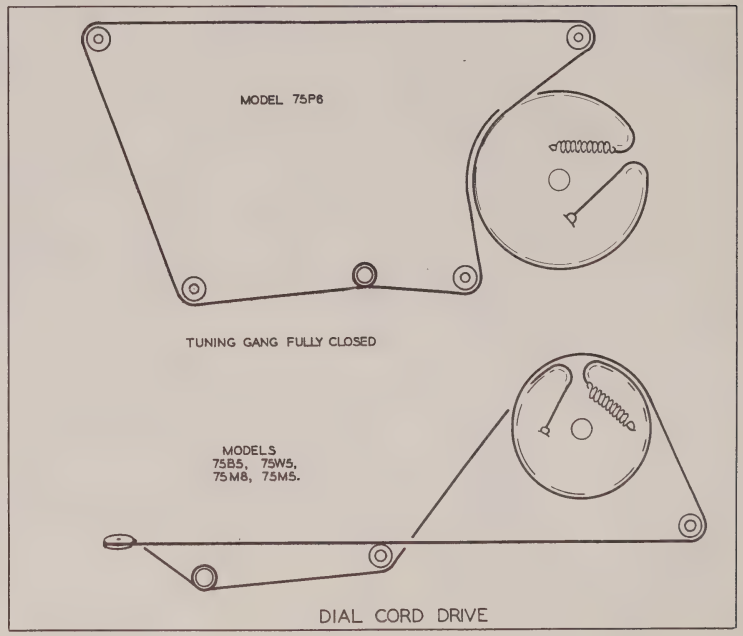
PARTS LIST AND DESCRIPTIONS (Continued)

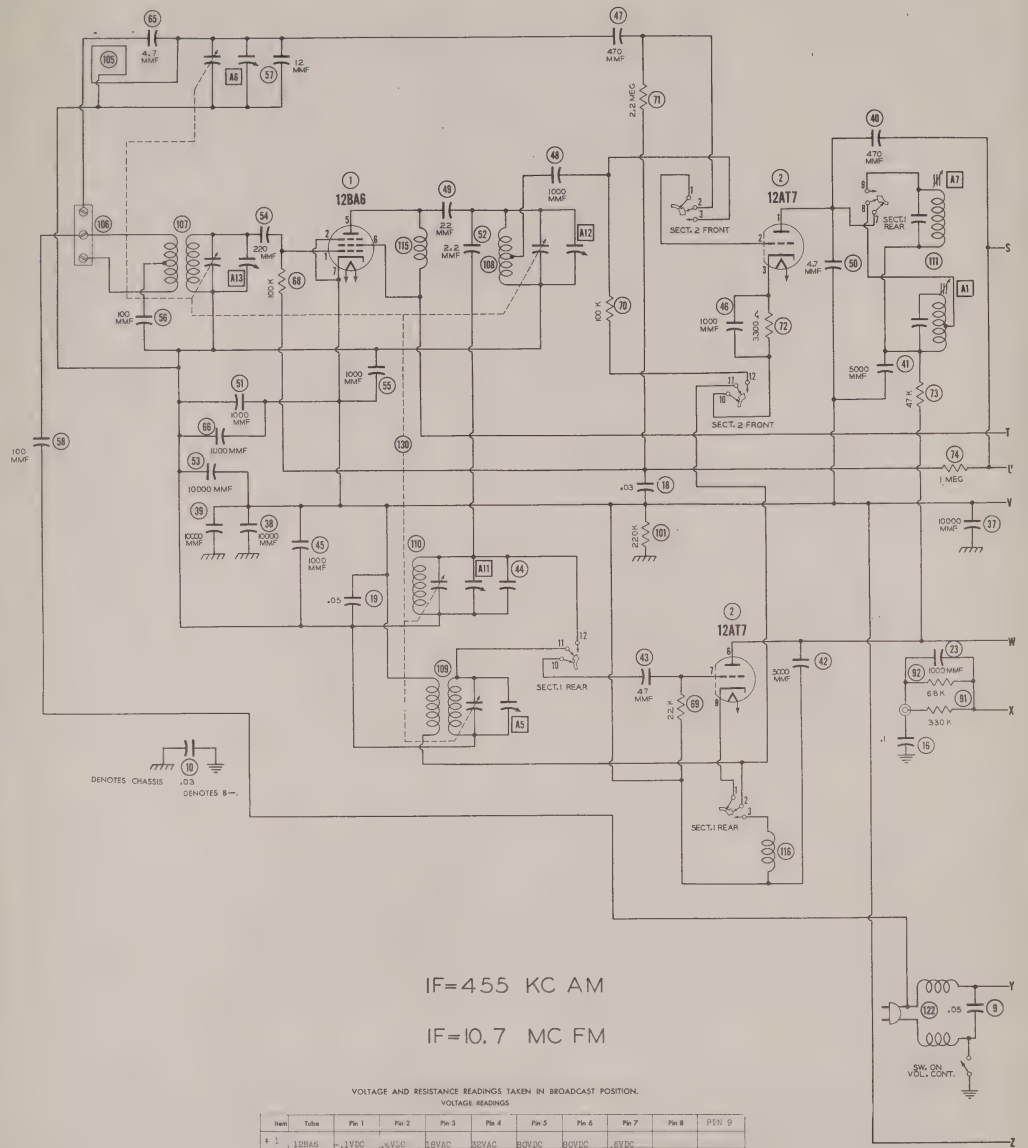
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA BENDIX PART No.	REPLACEMENT DATA ASTATIC PART No.	REMARKS
126		LT1-M	

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
127	Switch	SR2F00	AM-FM (Model 75P6).
128	"	SS1C02	Tone
129	Rectifier	CR0S01	Selenium.
130	2 Gang Var. Cap.	CV0D01	(21-522MMF, 31-207 MMF).
A5	Trimmer	CT1A20	BC Osc. Adjustment.
All	"	CT1B05	FM Osc. Adjustment.
	Dial Scale	DS0C11	Model 75P6.
	" "	DS0C14	Models 75B5, 75W5, 75M5.
	" "	DS0C13	Model 75M8.
	Dial Pointer.	1D0M25	Model 75P6.
	" "	1D0M21	Models 75B5, 75W5, 75M5, 75M8.





VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	PIN 9
1	12BA6	-.1VDC	.6VDC	1.8VAC	32VAC	80VDC	80VDC	.6VDC		
2A	12AT7	80VDC	-.3VDC	2.2VDC	32VAC	45VAC	117VDC	5-5VDC	.1VDC	34VAC
2B	12AT7	80VDC	-.3VDC	2.1VDC	32VAC	45VAC	80VDC	5-1VDC	.6VDC	38VAC
3	12BA6	-.6VDC	.1VDC	45VAC	86VAC	160VDC	85VDC	.1VDC		
4	12BA6	0V	0V	5.9VAC	70VAC	120VDC	120VDC	3.4VDC		
5	12AT6	0V	-.7VDC	0V	0V	1.8VAC	-.1VDC	0V	-.6VDC	53VDC
6	6AL5	0V	7.0VAC	150VDC	150VDC	0V	115VDC	117VAC	7.6VDC	

TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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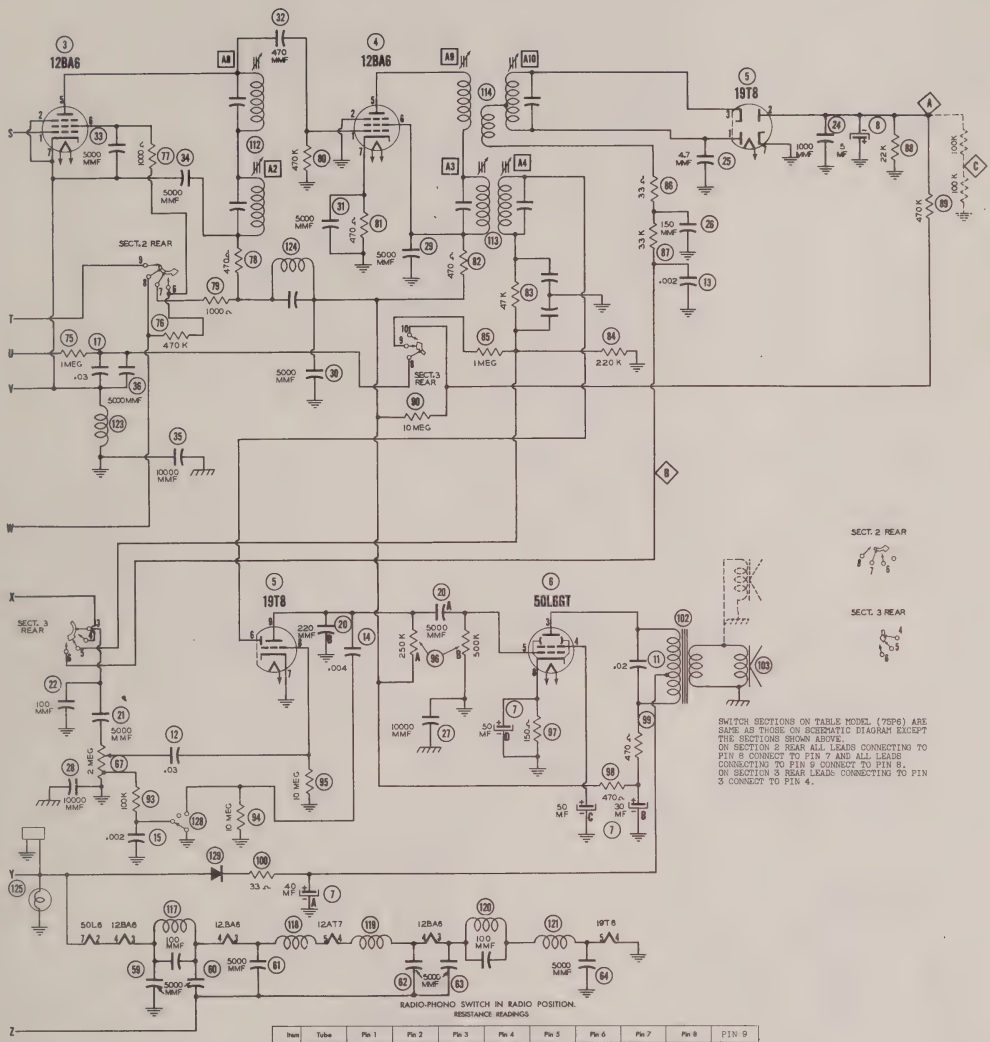
12BA6
12BA6
19T8
19T8
50L6GT
SECT. 2 REAR
SECT. 3 REAR
SECT. 2 REAR
SECT. 3 REAR
SWITCH SECTIONS ON TABLE MODEL (75P6) ARE SAME AS THOSE ON SCHEMATIC DIAGRAM EXCEPT THE SECTIONS SHOWN ABOVE.
ON SECTION 2 REAR ALL LEADS CONNECTING TO PIN 8 CONNECT TO PIN 7 AND ALL LEADS CONNECTING TO PIN 9 CONNECT TO PIN 8.
ON SECTION 3 REAR LEADS CONNECTING TO PIN 3 CONNECT TO PIN 4.
RADIO-PHONO SWITCH IN RADIO POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	PIN 9
# 1	12BA6	2.8 Meg.	21Ω	18Ω	29Ω	30KΩ	30KΩ	21Ω		
2A	12AT7	80KΩ	6.2 Meg.	3.3KΩ	29Ω	36Ω	30KΩ	22KΩ	23Ω	33Ω
# 2B	12AT7	80KΩ	100KΩ	3.3KΩ	29Ω	36Ω	30KΩ	22KΩ	28Ω	33Ω
3	12BA6	2.8 Meg.	21Ω	38Ω	46Ω	30KΩ	500KΩ	21Ω		
4	12BA6	470KΩ	0Ω	48Ω	58Ω	30KΩ	30KΩ	470Ω		
5	19T8	Inf.	22KΩ	Inf.	0Ω	18Ω	270KΩ	0Ω	10 Meg.	280KΩ
6	50L6	220KΩ	58Ω	30KΩ	30KΩ	500KΩ	30KΩ	90Ω	150Ω	

VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

AM alignment should be completed before FM alignment is attempted.

There are two horizontal rows of calibration marks on dial back plate. These are in order from left to right: top row, low frequency end limit, 580KC, 965KC, & 1475KC; bottom row, 90MC, 97MC, & 106MC. To set dial pointer, turn tuning cap. fully closed and set pointer to low frequency end limit.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD	High side to large AM stator of tuning cap. Low side to B-.	455KC	AM (Center position)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4	Short small AM stator of tuning cap. to B-. Adjust A1 thru A4 for max. output and repeat. Remove short from small AM stator of tuning cap.
2	100MMFD	"	1475KC	"	1475KC calibration mark.	"	A5	Adjust for max. output.
3	100MMFD	"	1475KC	"	Tune for max. output.	"	A6	" " " "
4	100MMFD	"	965KC	"	"	"		If pointer does not fall within calibration mark width, bend rotor plates of small AM section of tuning cap for max.output
5	100MMFD	"	580KC	"	"	"		If pointer does not fall within calibration mark width, bend rotor plates of small AM section of tuning cap. for maximum mum output. If rotor plates are bent, repeat steps 3,4 & 5 until no further improvement can be made.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

In step 7 connect two 100KΩ resistors in series from point A to B-. The center of these two resistors is point C. The two resistors must be within 5% of each other.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6	.01 MFD	High side to center FM stator of tuning cap. Low side to B-.	10.7MC (Unmod.)	FM (Clockwise).	Tuning cap. fully open.	D.C.Probe to point (A) Common to B-.	A7,A8 A9	Short front FM stator of tuning cap. to B-. Adjust A7,A8,A9 for maximum deflection.
7	.01 MFD	"	"	"	"	D.C.Probe to point (B) Common to Point C.	A10	Adjust for zero deflection. Repeat steps 6 & 7 until no further improvement can be made. Remove two 100KΩ resistors from point A. Remove short from front FM stator of tuning cap. Continue with FM RF alignment in step 8.

FIG.1

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∩ modulation and a minimum of 200KC sweep. Connect the synchronized sweep voltage from the signal generator to the horizontal amplifier. This voltage may be taken from the power line if signal generator does not have a synchronized voltage output. There may be some phase shift encountered between signal generator and scope horizontal sweep resulting in a double trace pattern. If provision is made for this in the scope, rotate phase control until the two curves coincide. If no provision is made for this, or the sync. voltage is taken from the power line, the same thing may be accomplished by inserting a cap. of suitable value (.01 to .1 MFD) in series with the horizontal sweep input.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
6	.01 MFD	High side to center FM stator of tuning cap. Low side to B-.	10.7MC (Freq.Mod.)	FM	Tuning cap. fully open.	Vertical input to point (B) Ground to B-.	A9,A10	Alternately adjust A9 for max. amplitude and straightness of pattern, and A10 for placement of center of pattern on scope horizontal sweep-line per Fig.1.
7	.01 MFD	"	10.7MC (Freq.Mod.)	"	"	"	A7,A8	Adjust for max. amplitude and symmetry of pattern per Fig.1. Continue with FM RF alignment in step 8.

FM RF ALIGNMENT

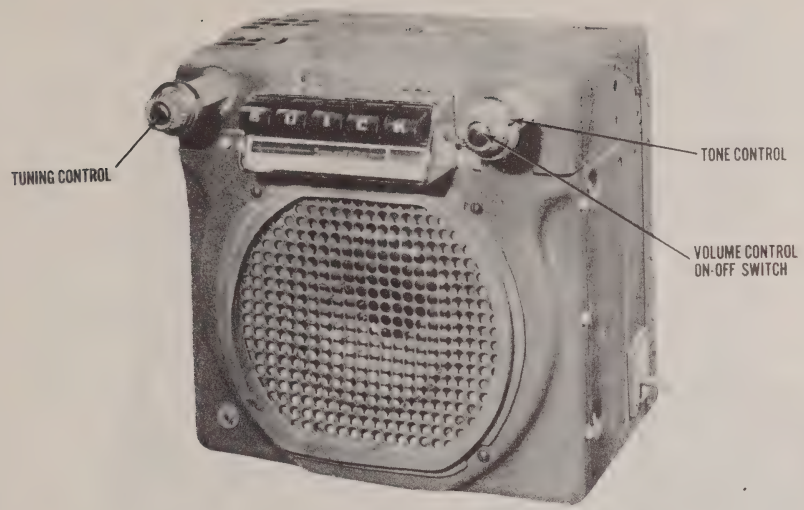
If pointer does not fall within width of calibration mark, the FM Oscillator coil must be adjusted. If dial pointer is on the low frequency side of calibration mark, compress turns slightly. If pointer is on the high side of calibration mark, expand turns slightly.

Adjustment of FM-RF and antenna coils may be accomplished by use of tuning wand. If output decreases upon insertion of either end of wand, the coil is adjusted correctly. If output increases upon insertion of brass end of wand, spread the turns slightly. If output increases upon insertion of iron end of wand. compress the turns slightly.

Connect high side of signal generator to a .01 MFD cap. This capacitor in series with a 300Ω carbon resistor is connected to either FM antenna terminal. Connect 30Ω carbon resistor from junction of resistor and capacitor to B-. This 30Ω resistor may be varied to match output impedence of signal generator. Connect low side of signal generator to B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8	(.01 MFD cap., 300Ω & 30Ω carbon resistors)	(See prealignment instructions).	106MC (Unmod.)	FM	106MC Calibration mark	D.C.Probe to point (A) Common to B-.	A11	Adjust for max. deflection, tune signal generator to 84.6MC. If signal is heard, retune signal generator to 106MC and open A11 to next peak. Adjust for maximum deflection and recheck for image.
9	(.01 MFD cap., 300Ω & 30Ω carbon resistors)	"	106MC (Unmod.)	"	Tune for maximum deflection.	"	A12, A13	Rock tuning cap. and adjust for maximum deflection.
10	(.01 MFD cap., 300Ω & 30Ω carbon resistors)	"	97MC (Unmod.)	"	"	"	FM Osc Coil. (110)	Adjust per preallignment instructions.
11	(.01 MFD cap., 300Ω & 30Ω carbon resistors)	"	90MC (Unmod.)	"	"	"	FM-RF Coil (108) & FM Ant. Coil (107)	Adjust per preallignment instructions. Repeat steps 8,9,10 & 11 until no further improvement can be made. Install receiver in cabinet.

With receiver in cabinet adjust AM & FM ant. trimmers (A6 & A13 respectively) for maximum volume on weak stations at high frequency end of each band.



BUICK MODEL 980798

TRADE NAME	Buick, Models 980797, 980798.
SUPPLIER	Buick Motors Div., General Motors Corp., Flint, Michigan.
TYPE SET	Battery Operated Custom Built Automotive Superheterodyne Receiver.
TUBES (SIX)	Types 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SR7 Det.-AVC-AF, (2) 6V6GT Power Output.
POWER SUPPLY	6 Volt Storage Battery.
RATING	7 Amp. @ 6.3 Volts DC.
TUNING RANGE—BROADCAST	550-1615KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to pin 8(Grid) of 6SA7. Low side to chassis.	262KC	Tuning slugs fully extended	Across voice coil	A1, A2 A3, A4	Adjust for maximum output.
2	60 MMFD	High side to ant. socket. Low side to chassis.	1615KC	"	"	A5, A6 A7	Set Ant.-RF- and Osc. cores out 1 13/16" from rear of coil forms. Adjust A5,A6 & A7 for maximum output.
3	60 MMFD	"	1430KC	Tune for maximum output.	"	A8, A9	Adjust for maximum output.
4	60 MMFD	"	1300KC	"	"		Loosen dial cord pulley set-screws and adjust pointer to 1300KC. Tighten set-screws.

With receiver installed in auto, and antenna fully extended, tune in weak signal near 1400KC and adjust A7 for maximum volume.

PUSHBUTTON ADJUSTMENTS

1. Turn receiver on and allow it to warm up for about 15 minutes.
2. Remove button. Shift spring lever on underside of button to opposite side and pull out.
3. Loosen screw. Turn re-set screw which shows when button is removed approximately two turns counter-clockwise.
4. Bottom screws. Push screw all the way in and hold in this position.
5. Tune in desired station manually. Use tuning knob on right of pushbuttons.
6. Release screw and tighten. Now carefully allow reset screw to return to extended position and turn clockwise until tight.
7. Replace button. Place button over re-set screw, push all the way in and release.

BUICK
MODELS 980797, 980798

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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PARTS LIST AND DESCRIPTIONS

BUICK MODEL 980797

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BUICK PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6SK7	6SK7	8N	
V2	Converter	6SA7	6SA7	8R	
V3	IF Amp.	6SK7	6SK7	8N	
V4	Det.-AVC-AF	6SR7	6SR7	8Q	
V5	Power Output	6V6GT	6V6GT	7AC	
V6	Power Output	6V6GT	6V6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BUICK PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	400	7240612		UP2245	DY-2X20-450	EL-220	◘ Filter.
C1B	20	400						▲ "
C2A	20	25	7238553	AF444D	UP222-35	DY-3X20-25	EL-325	Output Cathode Bypass
C2B	20	25						1st AF Cathode Bypass
C2C	20	25						" " " "
C3	330	500	7232557	1468-00035	5W5T3	MO.5-33	1FM-336	RF Coupling.
C4	.05	200	7230592	P288-05	GT2S5	ST-4-05	TM-15	AVC Filter.
C5	56	500	1215188	1468-00005	5W5Q5	MO.5-45	1FM-45	RF Coupling.
C6	30	500	1217735		5R5Q3	MOS.5-43	MS-43	Fixed Trimmer.
C7	470	500	7238879	1468-0005	5W5T5	MO.5-35	1FM-35	Fixed Padder.
C8	150	500	7230893	1468-00015	5W5T15	MO.5-315	1FM-315	Osc. Grid Cap.
C9	.1	400	1207908	P488-1	GT4P1	ST-4-1	TM-1	RF Bypass.
C10	350		7255725					Fixed Trim. Compensating. Cer.
C11	.01	400	1208600	P488-01	GT4S1	ST-4-01	TM-11	IF Cath. Bypass.
C12	47	500	7233313	1468-00005	5W5Q5	MO.5-45	1FM-45	IF Coupling.
C13	.005	600	7230912	P688-005	GT6D5	ST-6-005	TM-25	Audio Coupling.
C14	120	500	7240577	1468-0001	5W5T1	MO.5-31	1FM-31	Tone Compensation.
C15	.0025	600	7240578	P688-0022	GT6P2	ST-6-002	TM-22	" "
C16	220	500	7236105	1468-0002	5W5T2	MO.5-32	1FM-32	AF Plate Bypass.
C17	.2	400	7240579	P488-.22	GT4P2	ST-4-2	68P38	Audio Coupling.
C18	.025	400	1211232	P488-025	GT4S25	ST-4-02	TM-12	Tone Compensation.
C19	.0015	800	7236134	P1088-0015	GT16D1	STM-16-001	TR-21	" "
C20	560	500	7240566	1468-0005	5W5T5	MO.5-35	1FM-35	RF Bypass.
C21A	.015	1500	7236075	P1688-015	GT16S15	STM-16-015	MB-115	Buffer.
C21B	.015	1500		P1688-015	GT16S15	STM-16-015	MB-115	"
C22	560	500	7240566	1468-0005	5W5T5	MO.5-35	1FM-35	RF Bypass.
C23	.5	200	7236621	P288-5	GT2P5	ST-2-5	TC-5	Hash Filter.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BUICK PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	7241928			Volume Control & Switch tapped @ 300KΩ.
B	250KΩ	½				Tone Control. See note.
R1A	1 Meg.	½	7241967			Volume Control & Switch tapped @ 300KΩ.
B	250KΩ	½				Tone Control. See note1.

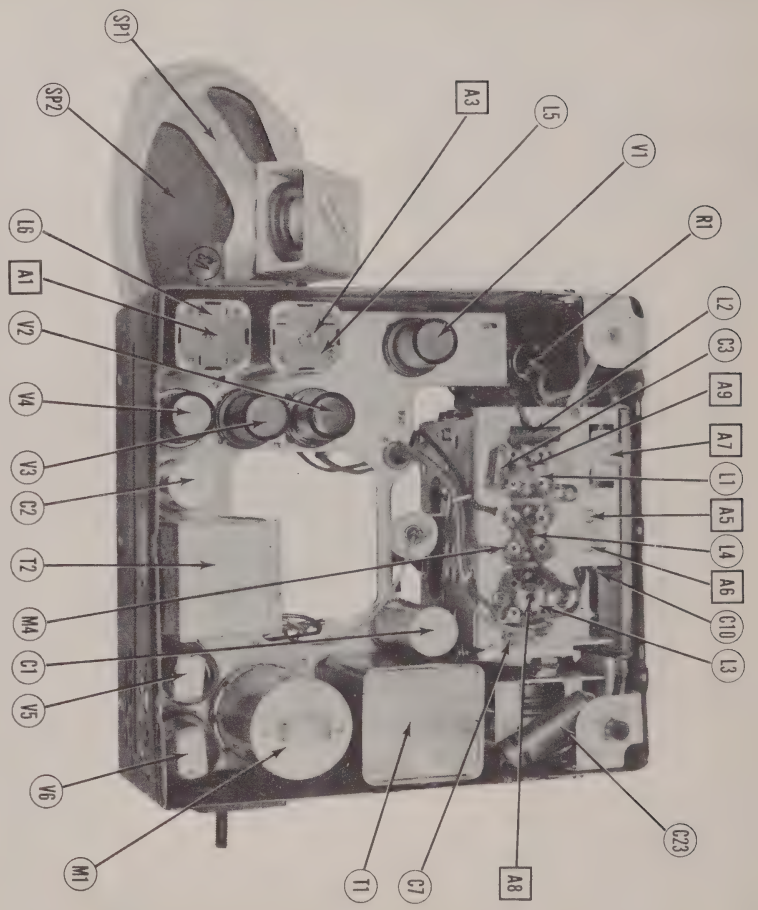
Note. Used in model 980798
Note 1. Used in model 980797.

Both controls have dual concentric shafts.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BUICK PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	150Ω	½	1213220	BW-½-150	Br.-Grn.-Br.	RF Cathode.
R3	2.2 Meg.	½	1214563	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network.
R4	15KΩ	2	7233653	BT-2-15K	Br.-Grn.-Or.	RF Screen.
R5	15KΩ	1	7237595	BTA-15K	Br.-Grn.-Or.	RF Plate.
R6	330KΩ	½	1214557	BTS-330K	Or.-Or.-Yl.	AVC Network.
R7	22KΩ	½	1214550	BTS-22K	Red-Red-Or.	Oscillator Grid.
R8	330Ω	½	1213224	BW-½-330	Or.-Or.-Br.	IF Cathode.
R9	1 Meg.	½	1213282	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network.
R10	1 Meg.	½	1213282	BTS-1 Meg.	Br.-Blk.-Grn.	Diode Load.
R11	27KΩ	1	1213342	BTA-27K	Red-Vi.-Or.	AF Plate.
R12	330Ω	½	1213224	BW-½-330	Or.-Or.-Br.	AF Cathode.
R13	680Ω	½	1214543	BTS-680	Blue-Gray-Br.	AF Cathode.
R14	1500Ω	½	1213237	BTS-1500	Br.-Grn.-Red.	AF Cathode.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R15	220KΩ	½	1214555	BTS-220K	Red-Red-Yl.	Diode Load.
R16	68KΩ	½	1213844	BTS-68K	Blue-Gray-Or.	Tone Compensation.
R17	330Ω	2	1214572	BW-2-330	Or.-Or.-Br.	Output Cathode.
R18	1800Ω	2	1214573	BT-2-1800	Br.-Gray-Red.	Filter.
R19	100Ω	½	1213217	BW-½-100	Br.-Blk.-Br.	Hash Suppression.
R20	100Ω	½	1213217	BW-½-100	Br.-Blk.-Br.	" "

TRANSFORMER VIBRATOR

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	BUICK PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
T1	6.3 VDC @ 4.3A	670 VAC .060A			7256939			

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BUICK PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2A	9300Ω CT	4Ω	380Ω CT	.3Ω	7240464				Choke Coupling
T2B	Matched to P-P Grids		1800Ω						

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			BUICK PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V.C. IMP.				
SP1	PM	4Ω	7255895		8A21	
	CONE DIA.	V.C. DIA.				
SP2	7 3/8"	1"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	BUICK PART No.	MEISSNER PART No.	
L1	Ant. Loading Coil.	5Ω		7244056		Items L1, 3, and 4 are permeability tuned and ganged.
L2	RF Choke	4Ω		7240251		
L3	RF Coil.	4.5Ω		7244057		
L4	Osc. Coil.	.7Ω	2.5Ω	7244058		
L5	Input IF	34Ω	34Ω	7238546	16-6652	
L6	Output IF	30Ω		7240467		
L7	Hash Choke	0Ω		7241708		
L8	Clutch Coil	2Ω				

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				BUICK PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Synchro-	6.3V	115∿	8630	D26	5426	

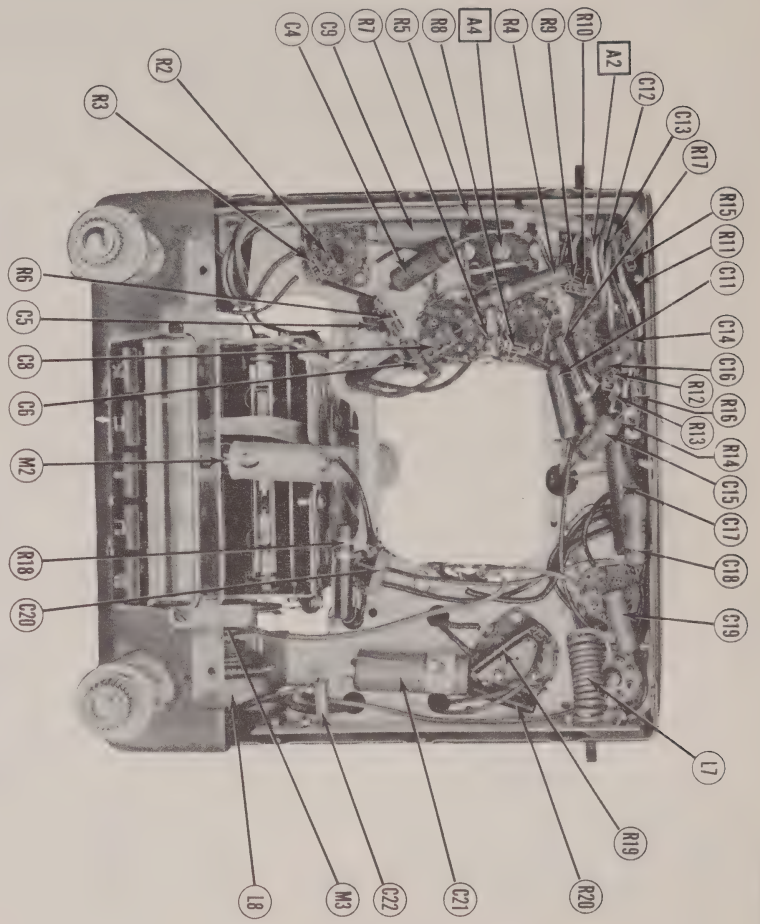
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					BUICK PART No.		
M2	Bayonet	6-8V	0.4A	White	125588		Type # 55

MISCELLANEOUS

ITEM No.	PART NAME	BUICK PART No.	NOTES
M3	Switch	7240397	Clutch
M4A	Tuner Assembly	7257817	Model 980797
M4B	" "	7257797	Model 980798
	Dial	7257755	

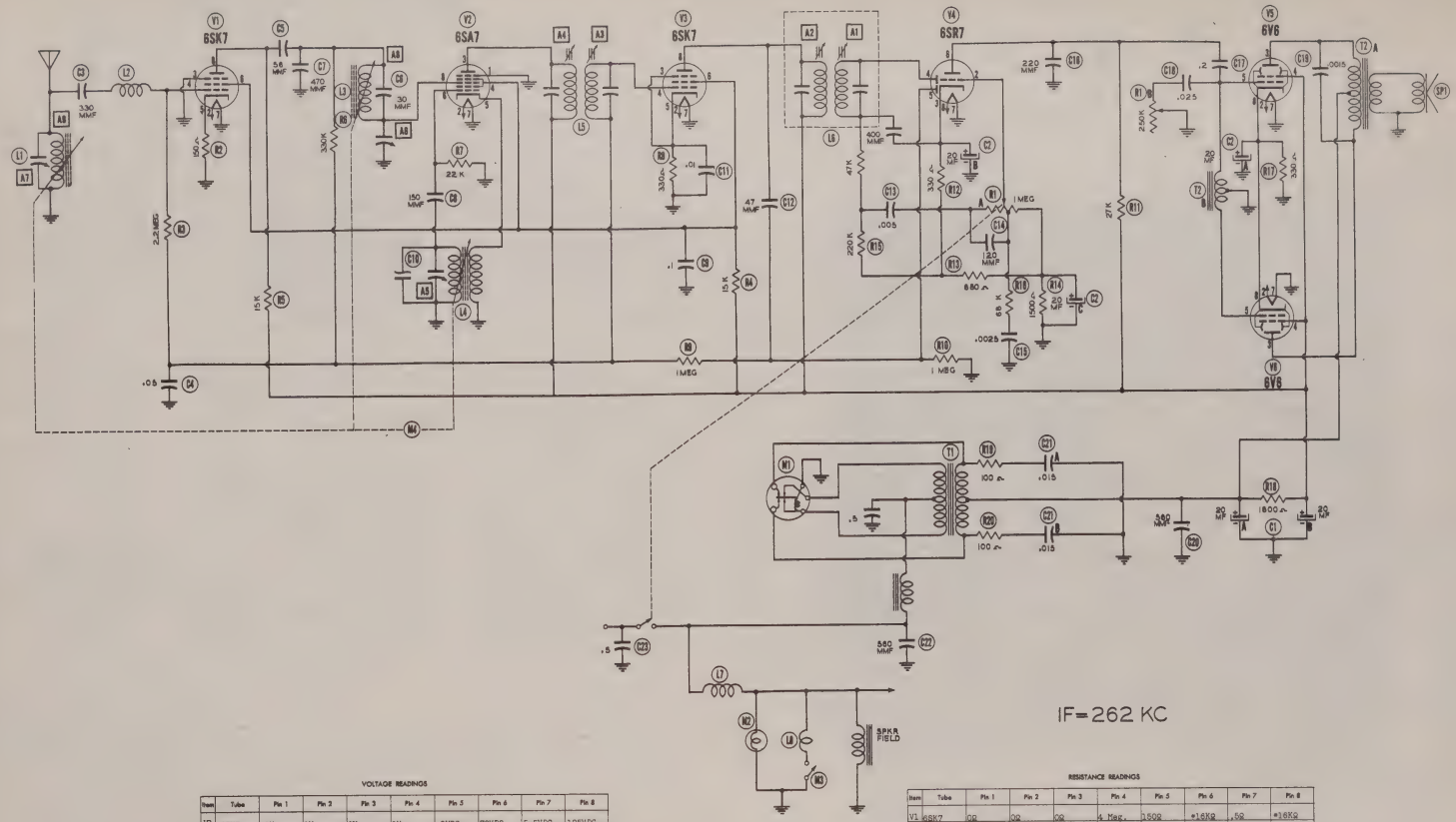
CHASSIS—BOTTOM VIEW



DATE 4/49 497-6 SET #59 FOLDER #6

BUICK MODEL 980797

BUICK MODEL 980797



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	6SK7	0V	0V	0V	0V	.8VDC	70VDC	5.5VDC	125VDC
V2	6SA7	0V	5.5VDC	150VDC	70VDC	4-8VDC	0V	0V	-.1VDC
V3	6SK7	0V	5.5VDC	1.6VDC	-.1VDC	1.6VDC	98VDC	0V	185VDC
V4	6SR7	0V	4.5VDC	8.6VDC	-.1VDC	3.2VDC	115VDC	5.5VDC	0V
V5	6V6GT	0V	5.5VDC	225VDC	150VDC	0V	0V	0V	11VAC
V6	6V6GT	0V	5.5VDC	225VDC	150VDC	0V	0V	0V	11VAC

TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	6SK7	0Ω	0Ω	0Ω	4 Meg.	150Ω	*1.6KΩ	.5Ω	*1.6KΩ
V2	6SA7	0Ω	.5Ω	*1.8KΩ	*16KΩ	20KΩ	.8Ω	0Ω	2 Meg.
V3	6SK7	0Ω	.5Ω	330Ω	1.6 Meg.	330Ω	*1.6KΩ	0Ω	*1.8KΩ
V4	6SR7	0Ω	1 Meg.	2KΩ	1 Meg.	855KΩ	*28KΩ	.5Ω	0Ω
V5	6V6GT	Inf.	.5Ω	*200Ω	*1.8KΩ	850Ω	Inf.	0Ω	330Ω
V6	6V6GT	Inf.	.5Ω	*200Ω	*1.8KΩ	1000Ω	Inf.	0Ω	330Ω

* Measured from function of C1A and C2D

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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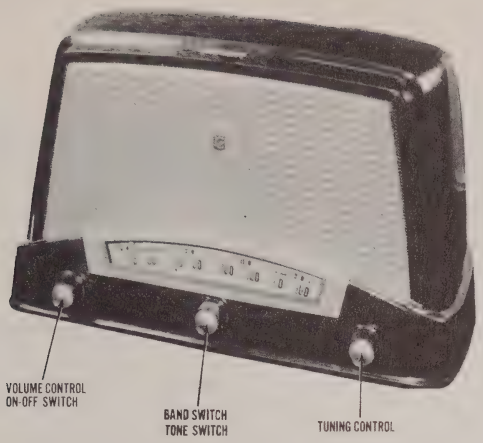
1. DC Voltage measurements are at 20,000 ohms per volt: AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



CROSLEY MODEL 9-105

TRADE NAME	Crosley, Models 9-105, 9-106W
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio.
TYPE SET	AC-DC Operated 2 Band Superheterodyne Receiver with Loop Antenna.
TUBES (SIX)	Types 6BJ6 RF Amp., 12BE6 Converter, 6BJ6 IF Amp., 12AV6 Det.-AVC-AF, 50C5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC.
RATING	.26 Amp. @ 117 Volts AC.
TUNING RANGE—BROADCAST	540-1600KC SHORT WAVE 9.4 - 11.9 MC.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Before aligning IF transformers, turn A5 counter-clockwise to its stop.

To set pointer, turn tuning cap. fully closed and set pointer at notch in edge of dial backplate.

Use isolation transformer if available. If not connect a .1 MFD. cap. in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	200 MMF	High side to pin 7(Grid)12BE6(V2). Low side to B-.	455KC	BC	Tuning cap. fully open.	Across voice coil	A1,A2 A3,A4	Adjust for max. output. If isolation trans. is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	200 MMF	High side to ext. ant. clip. Low side to B-.	455KC	"	"	"	A5	Adjust for minimum output.
3	200 MMF	"	1620KC	"	"	"	A6	Adjust for maximum output.
4	200 MMF	"	1400KC	"	Tune for max. output.	"	A7	Adjust for maximum output. Replace chassis bottom plate.
5	400Ω carbon resistor	High side thru 400Ω to ext.ant. clip. Low side to B-.	12.1MC	SW	Tuning cap. fully open.	"	A8	Adjust for maximum output.
6	400Ω carbon resistor	"	9.4MC	"	Tuning cap. fully closed.	"	A9	Adjust for maximum output. Repeat steps 5 & 6.
7	400Ω carbon resistor	"	11.8MC	"	Tune for max. output.	"	A10	Rock tuning cap. and adjust for maximum output.
8	400Ω carbon resistor	"	9.6MC	"	"	"	A11	" " " "

CROSLEY
MODELS 9-105, 9-106W

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DATE 4/49 497-7 SET #59 FOLDER 7

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6BJ6	6BJ6	7CM	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amp.	6BJ6	6BJ6	7CM	
V4	Det.-AVC-AF	12AV6	12AV6		
V5	Power Output	50C5	50C5		
V6	Rectifier.	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CROSLEY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	100	150	B-143680	PRS A 150/50-50*	BR8015	DSB-2X40-150	TA-505*	Filter-Red.
C1B	30	150		PRS 150/30	BR3015	M-30-150	UT-301	" Blue.
C2	.01	200	39001-13	P488-01	GT2S1	ST-4-01	TM-11	Ext.Ant.Isolation.
C3	125		C-137727-77					Fixed Trimmer. Cer.
C4	.075	200	39001-19	P288-1	GT2P1	ST-2-1	72P2	Line Isolation.
C5	220	500	B-137498-38	1468-0002	5W5T2	MO.5-32	1FM-32	RF Coupling.Note 2.
C6	30	500	B-137498-12		5R5Q3	MOS.5-43	MS-43	Fixed Trimmer. " 2.
C7	96		C-137727-83	1469-0001	5R5T1	MOS.5-31	MS-31	" " Cer.
C8	12		C-137727-52					" " "
C9	50		C-137727-21	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc.Grid cap. Note 2 Cer.
C10	.1	200	39001-19	P288-1	GT2P1	ST-2-1	TM-1	AVC Filter.
C11	.01	200	39001-13	P488-01	GT2S1	ST-4-01	TM-11	Decoupling.
C12A	100		Note 1	1468-0001	5W5T1	MO.5-31	1FM-31	Diode Filter.
C12B	100		Note 1	1468-0001	5W5T1	MO.5-31	1FM-31	" "
C13	.003	600	39001-76	P688-003	GT6D3	ST-6-003	TM-23	Audio Coup. Note 3.
C14	.002	600	39001-74	P688-002	GT6D2	ST-6-002	TM-22	Tone Comp. " 3.
C15	.002	600	39001-74	P688-002	GT6D2	ST-6-002	TM-22	" " " 3.
C16	100		B-143686-3	1468-0001	5W5T1	MO.5-31	1FM-31	AF Plate Bypass. Note 3. Cer.
C17	.02	600	39001-80	P688-02	GT6S2	ST-6-02	TM-12	Audio Coupling.
C18	.03	400	39001-17	P488-03	GT4S3	ST-6-03	TM-13	Output Plate Bypass.
C19	.05	200	39001-17	P288-05	GT2S5	ST-4-05	TM-15	Line Filter.

* Parallel sections to obtain desired capacity.

Note 1. Items C12A, C12B and R7 are combined into one unit obtainable under Mfgrs. Part # B-142951-2.

Note 2. Models in later production combine items C5,C6, and C9 into one unit, obtainable under Mfgrs. Part # B-144675-4.

Note 3. Models in later production combine items C13,C14,C15 and C16 into one unit obtainable under Mfgrs. Part # B-144675-5. The combined unit uses .002 MFD for replacement of item C13.

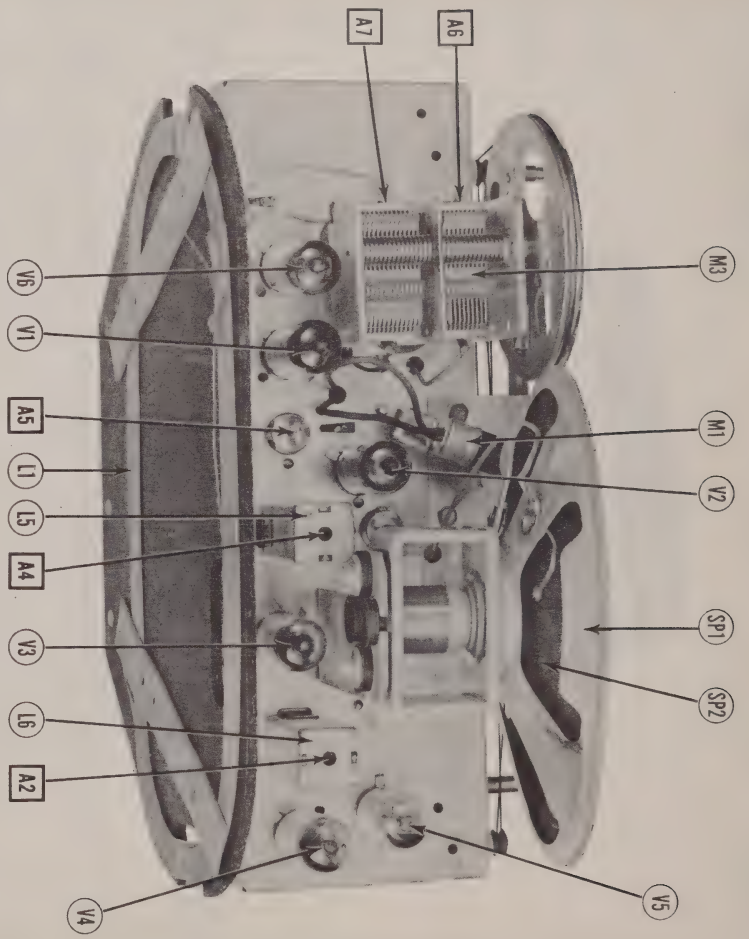
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	39368-18	D13-137X	AT-109	Volume Control.
R1B	Shaft		39370-2	E	KSS-3	Attach to R1A per instructions.
R1C	Switch		393269-1	41	SW-A	" " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	220KΩ	½		BTS-220K	Red-Red-Yl.	Line Isolation. See note.
R3	4700Ω	½	39373-47	BTS-4700	Yl.-Vi.-Red.	RF Decoupling.
R4	22KΩ	½	39373-60	BTS-22K	Red-Red-Or.	Oscillator Grid.
R5	22KΩ	½	39373-60	BTS-22K	Red-Red-Or.	Converter Grid.
R6	2.2 Meg.	½	39373-97	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network.
R7	47KΩ		See Note 1	BTS-47K	Yl.-Vi.-Or.	Diode RF Filter.
R8	10 Meg.	½	39373-107	BTS-10 Meg.	Br.-Blk.-Blue.	AF Grid.
R9	470KΩ	½	39373-87	BTS-470K	Yl.-Vi.-Yl.	AF Plate Load.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	CROSLEY PART No.	IRC PART No.		
R10	100KΩ	½	39373-74	BTS-100K	Br.-Blk.-Yl.	Tone Compensation.
R11	470KΩ	½	39373-87	BTS-470K	Yl.-Vi.-Yl.	Output Grid.
R12	100Ω	½	39373-14	BW-½-100	Br.-Blk.-Br.	Output Cathode.
R13	47Ω	1	39373-119	BW-1-47	Yl.-Vi.-Blk.	Filter.
R14	1200Ω	1	39373-144	BTA-1200	Br.-Red-Red.	"

Note: Not used in all models.
Note 1: Items C12A, C12B and R7 are combined into one unit and are obtainable under Mfgrs. PT. # B-142951-2.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CROSLEY PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2100Ω	3.5Ω	190Ω	.7	138131-1	A-3876	T22S45	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CROSLEY PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V.C. IMP.				
SP1	PM	3.5Ω	AD-143694		46A1 *	* Drill and tap magnet frame. Trim flange.
	CONE DIA.	V. C. DIA.				
SP2	4" x 6"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	CROSLEY PART No.	MEISSNER PART No.
L1	Loop Ant.	0Ω	3Ω	AC-143698	
L2	Sw. Ant.	.2Ω		AW-144118	
L3A	IF Trap Coil	2Ω		AW-144145	
L3B	Peaking coil	30Ω			
L4A	AM Osc.Coil	.6Ω	7Ω	AW-144144	
L4B	SW Osc.Coil	0Ω	.1Ω		
L5	Input IF	10Ω	9.5Ω	AC-139919-4	16-6678
L6	Output IF	16.5Ω	16Ω	AC-139919-3	16-6678

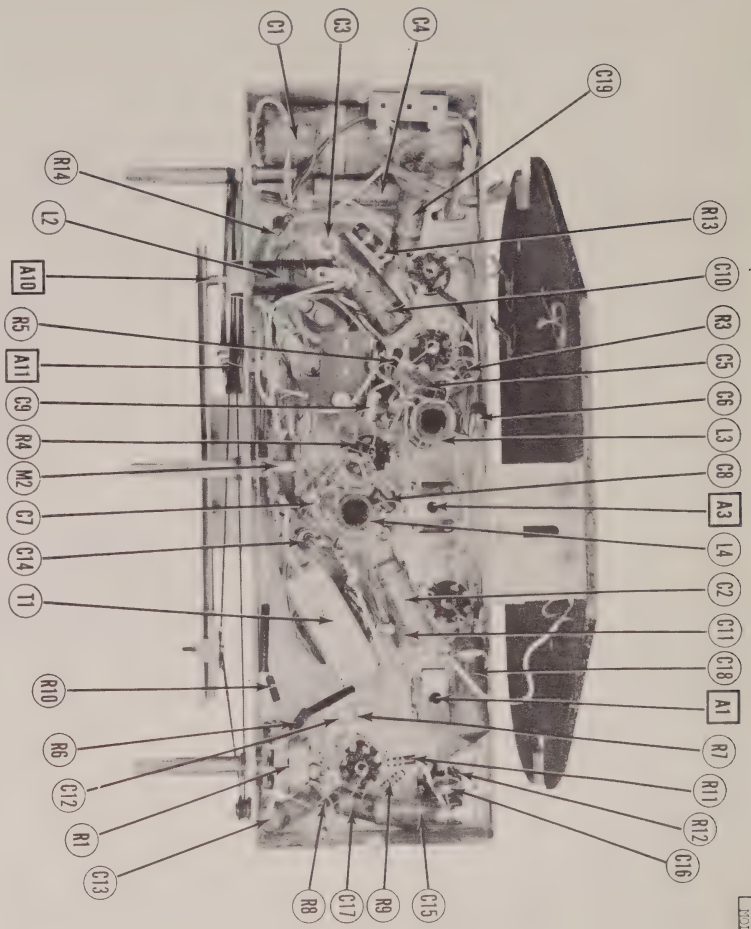
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CROSLEY PART No.		
M1	Bayonet	6-8V	0.15A	Brown	W-48858		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
M2	Switch	B-144128	Band-Tone.
M3	2 Gang Var.Cap.	AC-137073-26	(20-487 MMF, 15-222 MMF)
A8	Trimmer	C-136327-39	SW Oscillator Adjustment.
A10	"	C-136327-39	SW Ant. Adjustment.
	Cabinet	R-143113	Model 9-105
	"	AW-143415	" 9-106W
	Dial Pointer	B-143289	
	Dial Window	C-144179	
	Knob	B-138576-8	Model 9-105
	"	B-138576-7	" 9-106W

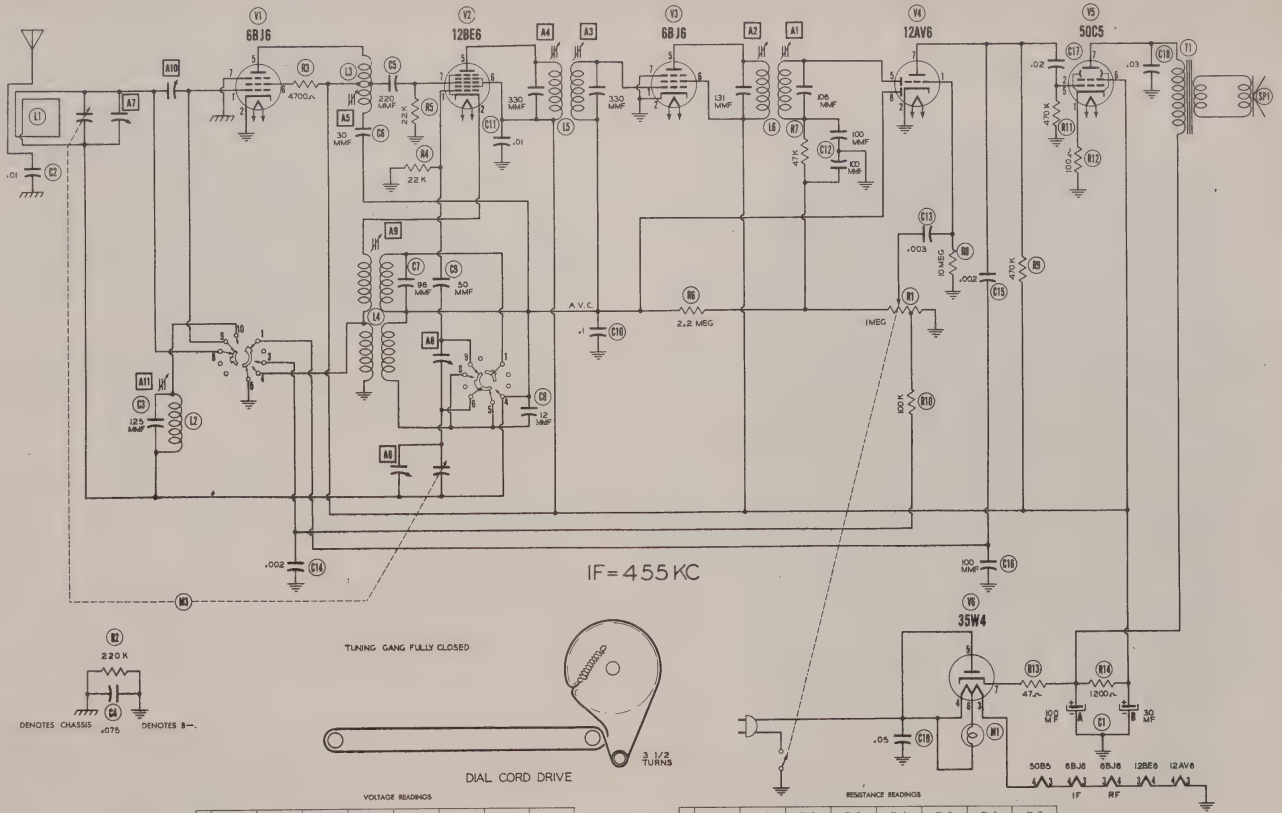
CHASSIS—BOTTOM VIEW



DATE 4/49 497-7 S3 #59 FOR SER 7

CROSLEY MODEL 9-105

CROSLEY MODEL 9-105



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	6BJ6	-.6VDC	0V	31VAC	24VAC	62VDC	78VDC	0V
2	12BE6	3-5.8VDC	0V	24VAC	12VAC	78VDC	78VDC	-.1VDC
3	6BJ6	-.6VDC	0V	31VAC	37VAC	78VDC	78VDC	0V
4	12AV6	-.7VDC	0V	0V	12VAC	-.1VDC	0V	45V3C
5	50C5	4VDC	0V	87VAC	37VAC	0V	78VDC	108VDC
6	35W4	0V	0V	87VAC	117VAC	118VAC	118VAC	117VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	6BJ6	3.2 Meg.	0Ω	30Ω	24Ω	8KΩ	1200Ω	0Ω
2	12BE6	23KΩ	.5Ω	24Ω	13Ω	12000Ω	12000Ω	22KΩ
3	6BJ6	3.2 Meg.	0Ω	30Ω	38Ω	12000Ω	12000Ω	0Ω
4	12AV6	10 Meg.	0Ω	0Ω	13Ω	1 Meg.	0Ω	470KΩ
5	50C5	100Ω	470KΩ	85Ω	38Ω	470KΩ	1200Ω	240Ω
6	35W4	0Ω	Inf.	85Ω	112Ω	110Ω	110Ω	40KΩ

* Measured from pin 7 of tube 6.(35W4)

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1. DC Voltage measu.ements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

DELCO MODEL TV-201

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DELCO MODEL TV-201

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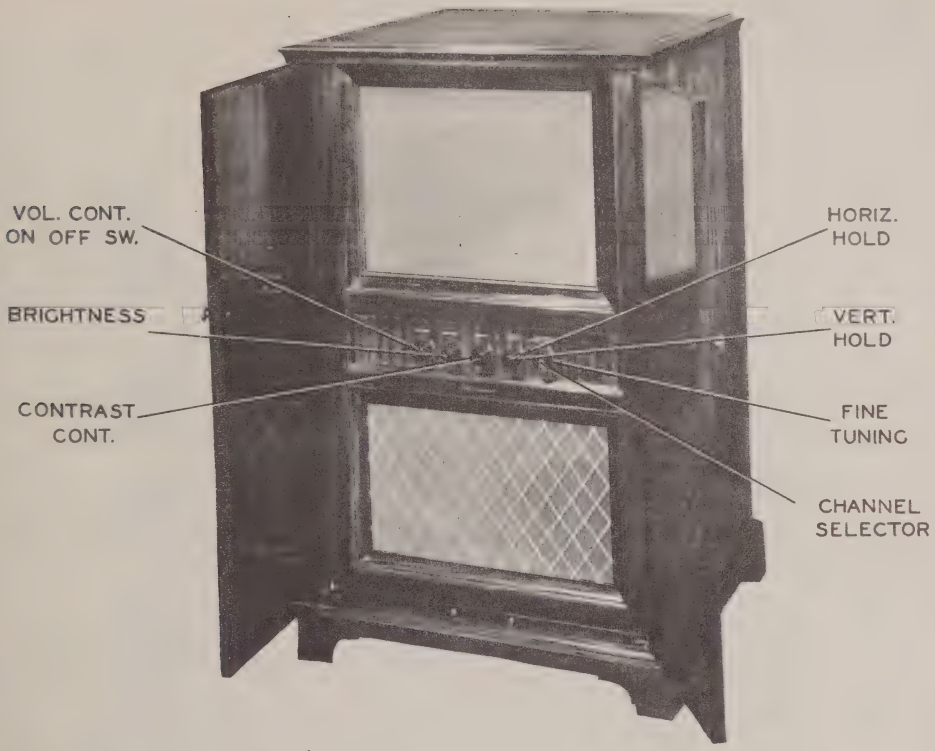
Date 4/49—No. 497-8 Set No. 59—Folder No. 8



DELCO
MODEL TV-201

TRADE NAME	Delco, Model TV-201
SUPPLIER	United Motors Service, Div. of GMC, General Motor Bldg., Detroit 2, Michigan
TYPE SET	Projection Television Receiver
TUBES	Twenty-Four
POWER SUPPLY	105-125 Volts, 60 cycles AC. RATING 2.0 Amps @ 117 Volts.
TUNING RANGE	Channels 2 through 13

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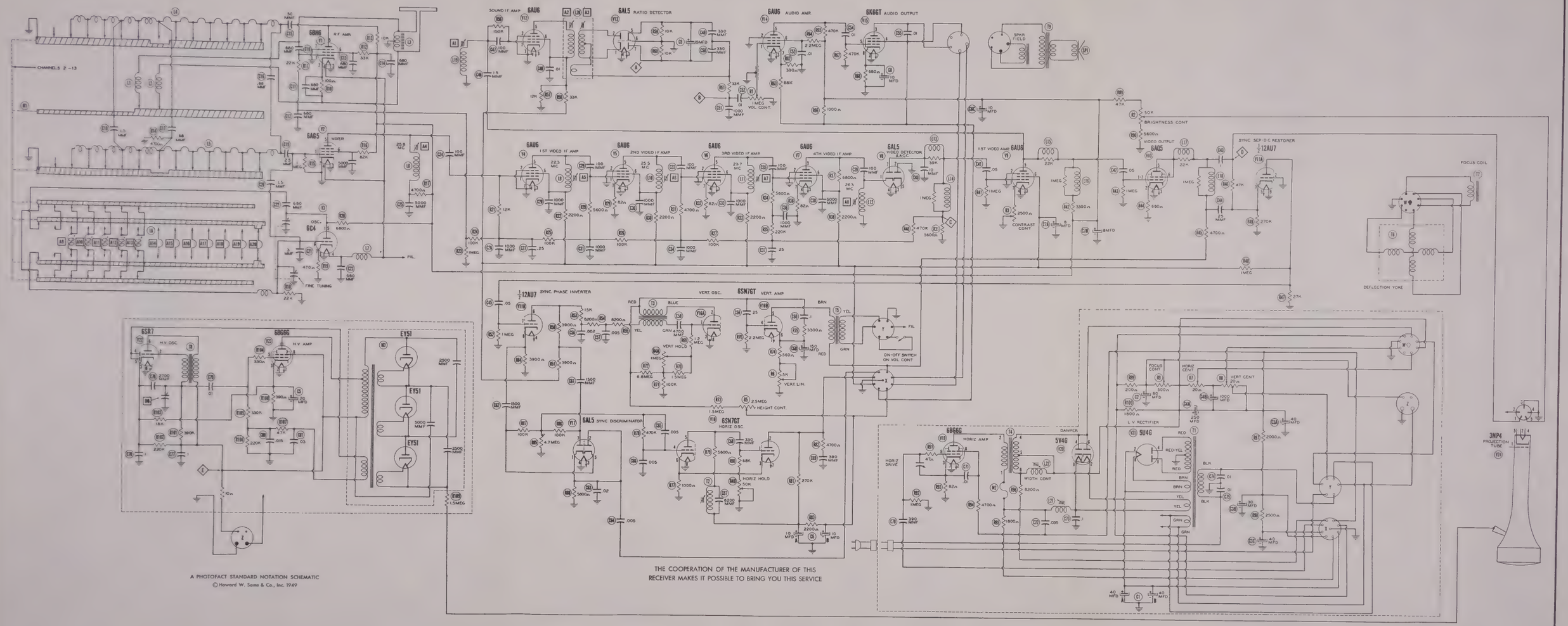
DATE 4/49 497-8 SET #59.FOLDER #8



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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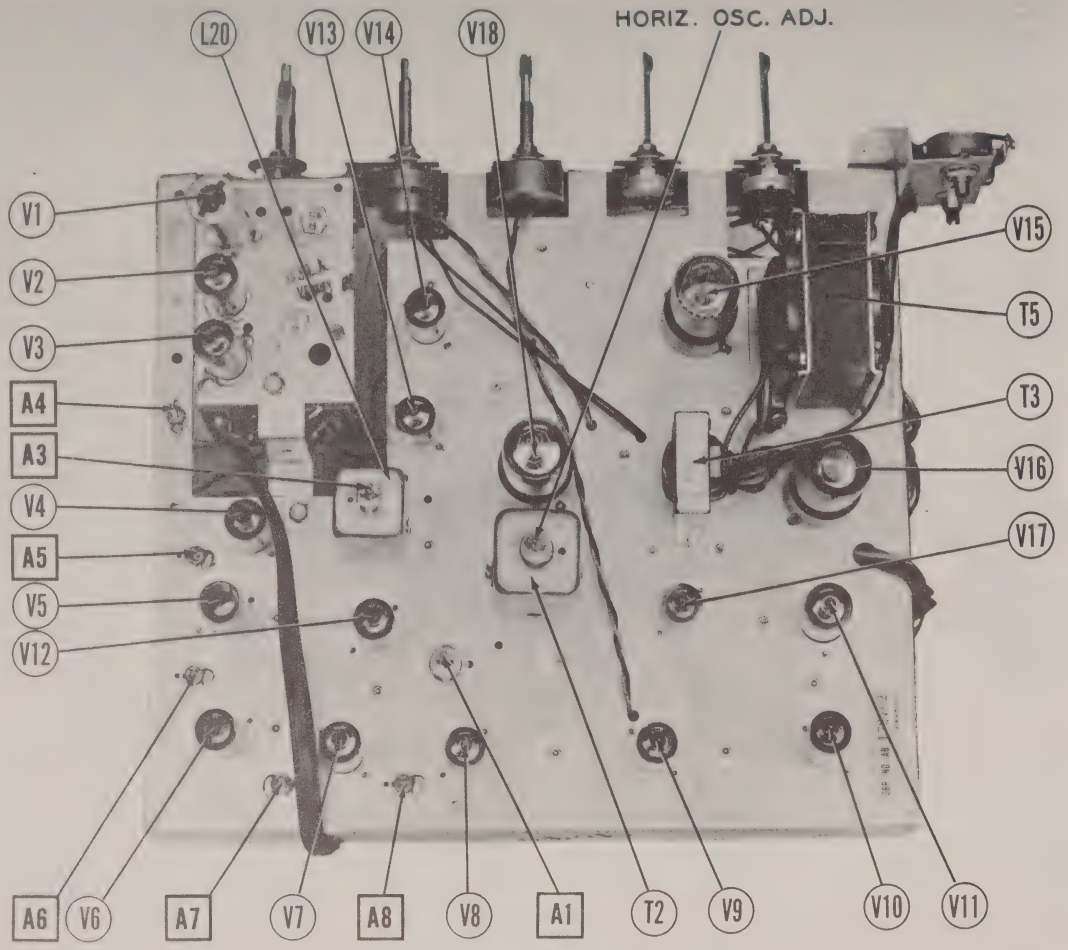
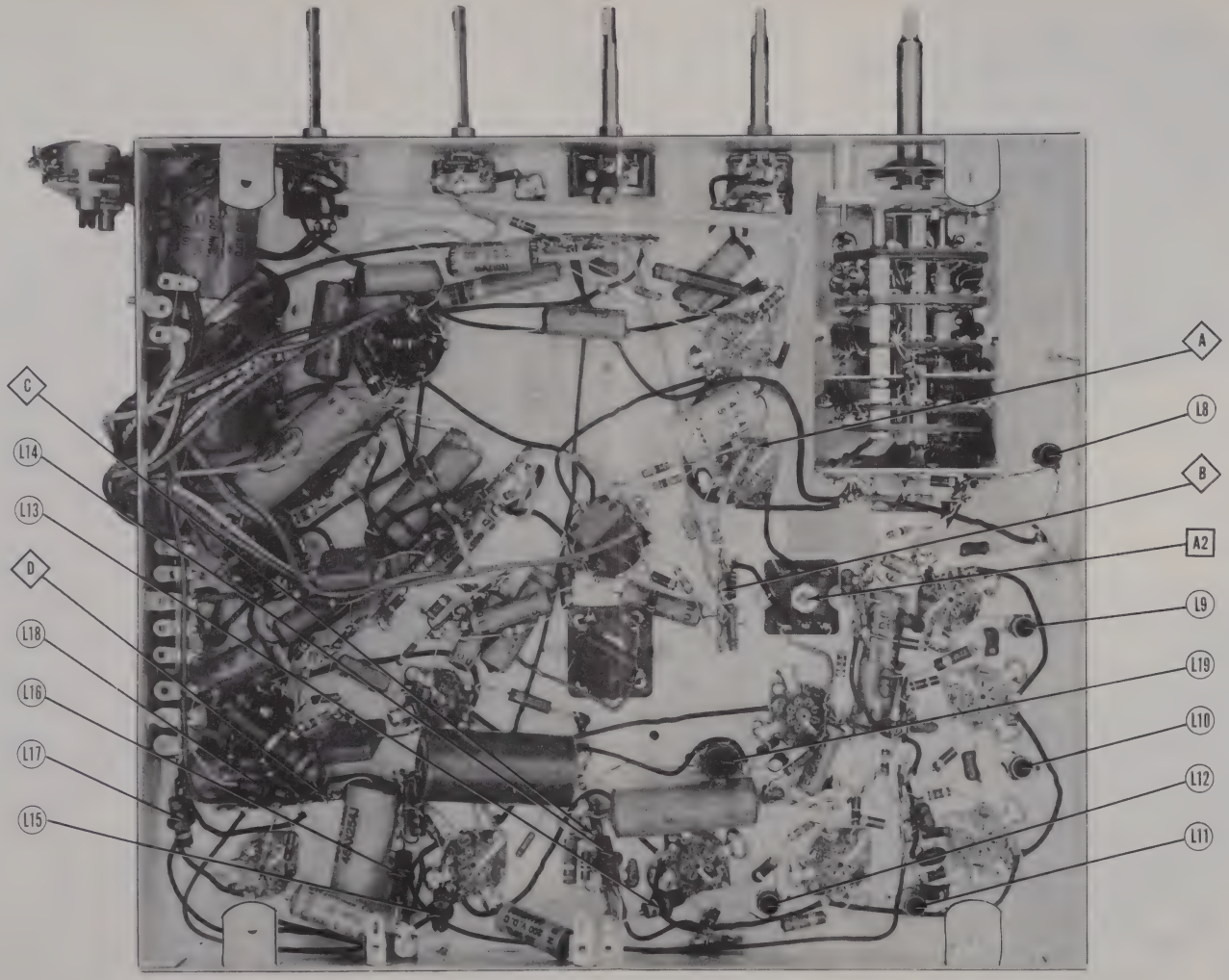
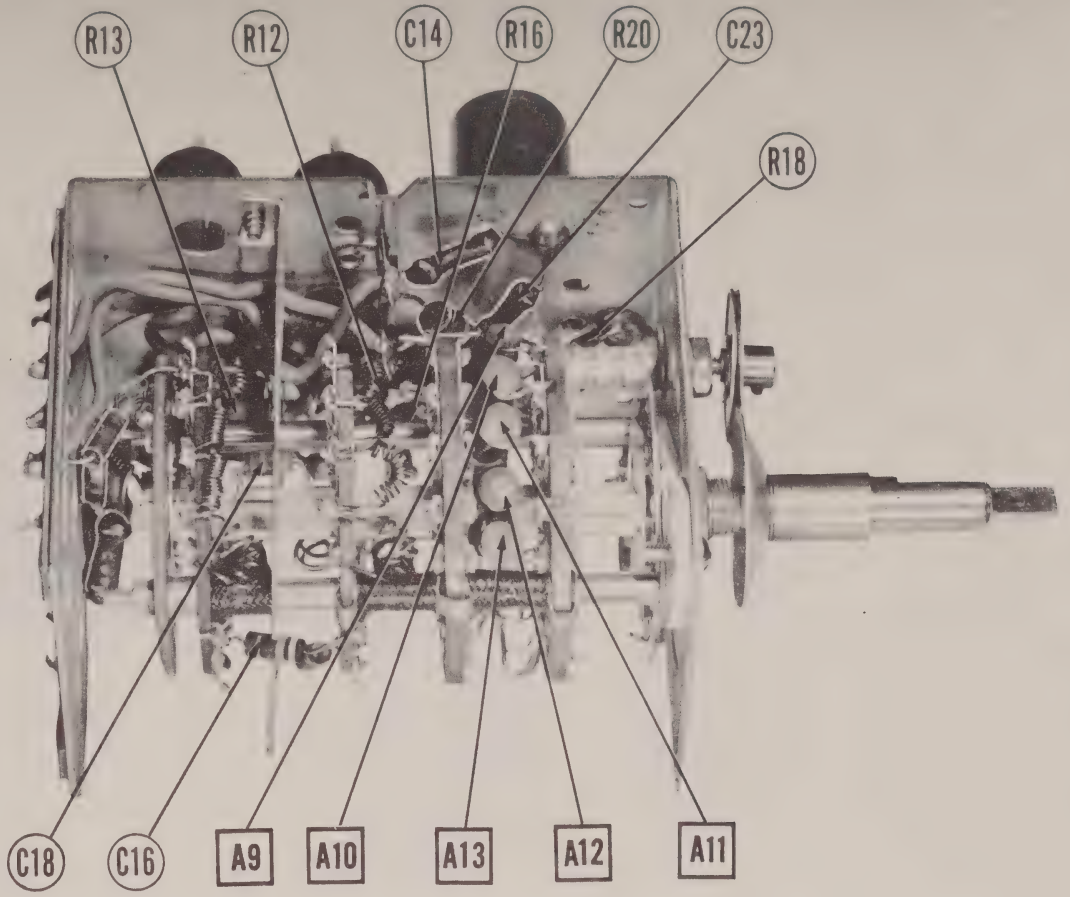
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



RF TUNER-LEFT SIDE

ALIGNMENT INSTRUCTIONS

SOUND ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	5000MMF	High side to pin 1 (Grid) 6AU6 (V9). Low side to chassis.	4.5 MC (Unmod)	Any	DC Probe to pin 7 6AL5 (V13) Point A. Common lead to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal generator to give approximately 1 volt reading on VTVM.
2.	5000MMF	"	"	"	DC Probe to point B. Common to chassis.	A3	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

Shift the frequency of the signal generator either side of 4.5MC and slightly readjust A2 for approximately equal peaks. For best results, use only enough signal generator output to give one volt peaks. Retouch A3 for null point.

IF AMPLIFIER ALIGNMENT

Remove oscillator tube V3 (6C4) before aligning the IF coils to prevent any possible spurious beats which might give improper alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	Two 150Ω carbon res.	Insert resistor in each generator lead and connect across antenna terminals.	25.8MC 22.3MC 25.5MC 23.7MC 26.3MC	2 " " " "	DC Probe to point C. Common to chassis.	A4 A5 A6 A7 A8	Adjust the five IF Coils at their listed frequencies for maximum deflection keeping signal generator level at such a point to maintain approximately a two volt reading on VTVM.

Tune the signal generator from 21MC thru 26.25MC, attenuated togive a 1 1/2 volt reading on VTVM at the peaks. Plot IF response curve. Check readings at 21.75MC, 26.25MC and the dip between peaks. See figure 1 for correct response curve.

OVERALL IF RESPONSE CHECK USING SWEEP GENERATOR AND OSCILLOSCOPE

Connect synchronized sweep voltage from signal generator to horizontal amplifier in scope to obtain horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	5000MMF	High side to pin 1 (Grid) 6AG5 (V2). Low side to chassis	24MC (10MC Sweep)	21.75MC 26.25MC	2	Vert. Amp. to point C. Low side to chassis.		If necessary, slighly retouch A4, A5, A6, A7, and A8 to obtain pattern similar to Fig 1. Check to see that markers fall at proper points.

OSCILLATOR ALIGNMENT

The RF and Mixer lines of the tuner are very stable and pre-set at the factory, and normally do not require adjustment in the field. They may be touched up, however, by compressing or expanding the coils as required to bring up the overall gain.

The local oscillator operates 24.5MC above the center frequency of each TV Channel. To set the local oscillator, a seperate "BFO" generator set at 24.5MC is used to obtain a zero beat with this difference frequency. Couple the "BFO" generator to the receiver by means of a few turns of hookup wire coiled around the 6AL5 video detector tube (V8). Connect a .01mfd. capacitor between point D on the schematic and pin 1 of the 6AU6 audio amplifier tube (V14) Turn the fine tuning control to the midpoint of its range and set the channel selector switch to the channel which is to be aligned. (The oscillator circuits of each channel are independent of each other and therefore only those channels requiring alignment need be adjusted.)

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BFO GENERATOR FREQUENCY	CHANNEL		ADJUST	REMARKS
5.	Two 150Ω res.	Insert resistor in each lead of signal generator and connect across the antenna input.	57MC 63MC 69MC 79MC 85MC 177MC 183MC 189MC 195MC 201MC 207MC 213MC	24.5MC " " " " " " " " " " "	2 3 4 5 6 7 8 9 10 11 12 13		A9 A10 A11 A12 A13 A14 A15 A16 A17 A18 A19 A20	Adjust slugs or shift the coil turns for rough audio beat in the speaker.

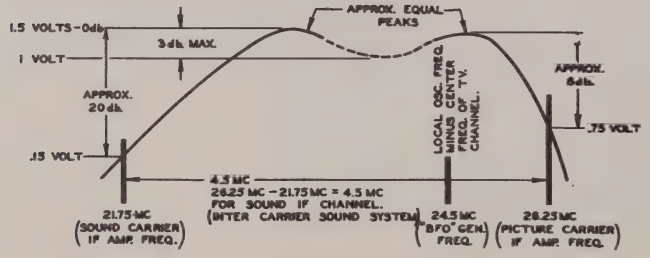

1.5 VOLTS-0db
1 VOLT
.13 VOLT
APPROX. 20db.
3db MAX.
APPROX. EQUAL PEAKS
LOCAL OSC. FREQ. MINUS CENTER FREQ. OF T.V. CHANNEL.
APPROX. 6db.
.75 VOLT
4.5 MC
26.25 MC - 21.75 MC = 4.5 MC FOR SOUND IF CHANNEL. (INTER CARRIER SOUND SYSTEM)
21.75 MC (SOUND CARRIER IF AMP. FREQ.)
24.5 MC (BFO GEN. FREQ.)
26.25 MC (PICTURE CARRIER IF AMP. FREQ.)

FIG. 1

ADJUSTMENT OF OPTICAL SYSTEM

This operation should be necessary only when replacing the 3NP4 or the focus and deflection coils.

Before turning on the set, turn both the contrast and brightness control full off. After about one minute slowly advance the controls for a medium bright raster. (If a spot or line appears on the screen, immediately turn brightness control full off and determine cause of sweep failure).

Adjust the focus control for the best possible focus on the face of the tube. This is necessary since no amount of mechanical focusing can correct a defocused image on the face of the tube.

Adjust the centering controls to center picture on the face of the tube. If mechanical centering is required in addition to the electrical centering, adjust the two centering screws B1. While adjusting these screws, be careful not to force the focus coil against the neck of the tube by tilting it excessively in either direction. With the raster centered on the face of the tube the image should be centered on the viewing screen. Many test patterns have wedges or arrows which indicate the edges of the picture. If a pattern having these marks is being received, they can be used for checking the centering. If picture is not properly centered on the viewing screen loosen the three mounting bolts of the projection unit and adjust the three leveling screws B2 to center the pattern on the viewing screen.

If the pattern tilts on the screen, loosen the four mounting bolts and rotate the mounting assembly slightly as required. Tighten the mounting bolts .

Check to see that the pattern is still in sharp focus on the face of the tube. The picture should also be in focus on the viewing screen. If it is not, loosen the five locking nuts about one turn each. Adjust the overall focusing adjustment B3 to focus the center of the picture. Adjust the horizontal focusing adjustment B4 for equal focus in the areas on each side of the center. Adjust the vertical focusing adjustment B5 for equal focus above and below the center. After each adjustment of B4 and B5 check the overall focus adjustment B3. By careful adjustment of B3, B4 and B5, the entire pattern can be brought into focus. After completing the adjustments tighten the five locking nuts.

CAUTION- The screws on top of the projection unit are adjustments for the optical system inside the unit and under no circumstances should they be disturbed. These adjustments or replacement of the optical parts must be done at the factory.

HIGH VOLTAGE OSCILLATOR ADJUSTMENT

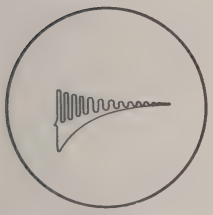


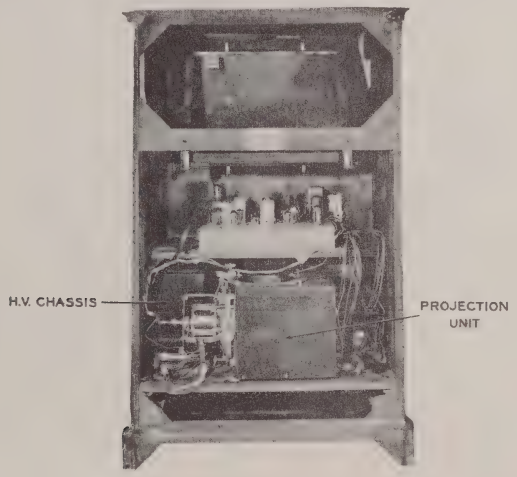
FIG. 2

The blocking oscillator frequency in the high voltage supply should be maintained at 1000 ± 70 cycles. Unless a component that determines frequency has been altered or replaced, adjustment is not usually necessary. The frequency should be checked if the 6SR7 tube (V22) or any of the associated parts have been replaced.

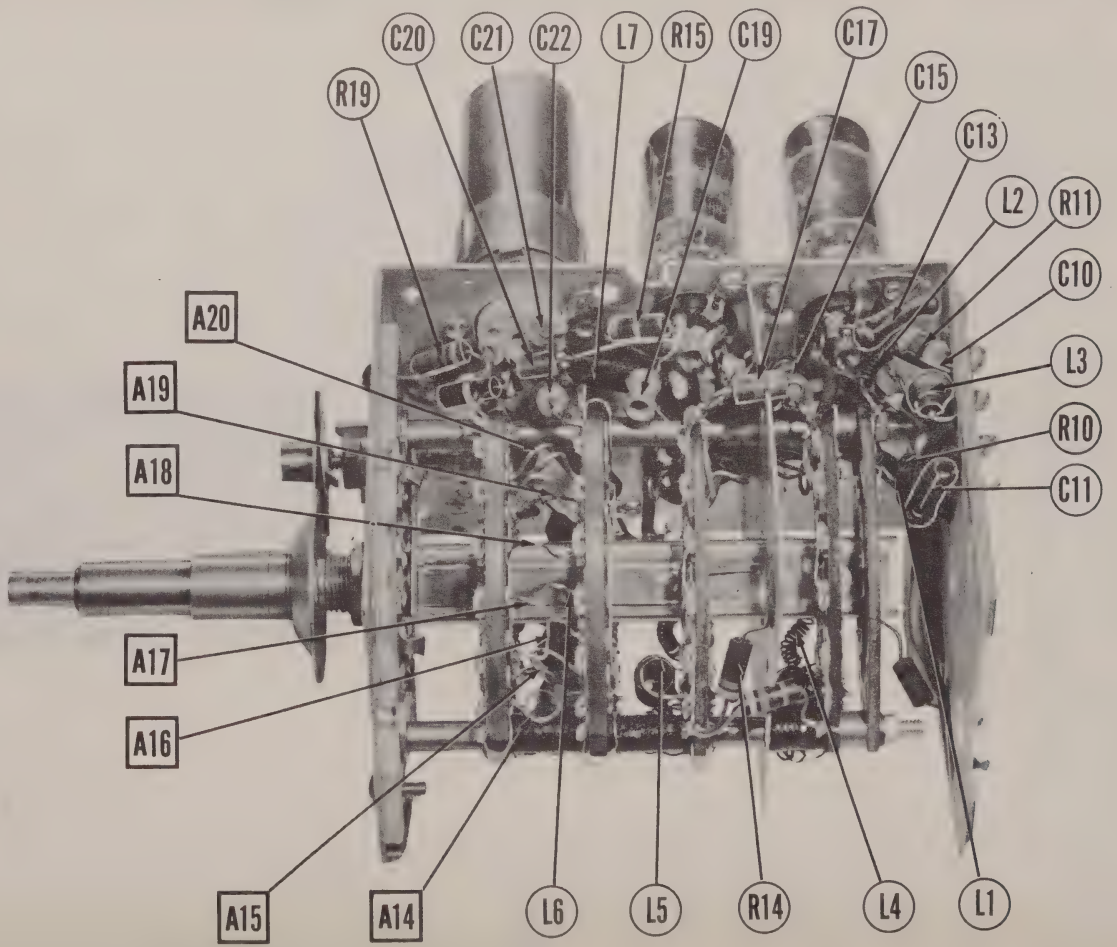
The 1000 cycle adjustment controls the oscillator frequency which determines the filament supply of the three sealed rectifiers but has little effect on current regulation and voltage output.

Insert a 10Ω resistor in the B+ lead as shown on the schematic and connect the vertical amplifier of the scope between point E and the chassis. Feed a 1000 cycle signal from an audio generator to the horizontal sweep amplifier of the oscilloscope. Adjust B6 for a single stable Lissajous pattern as shown in figure 2.

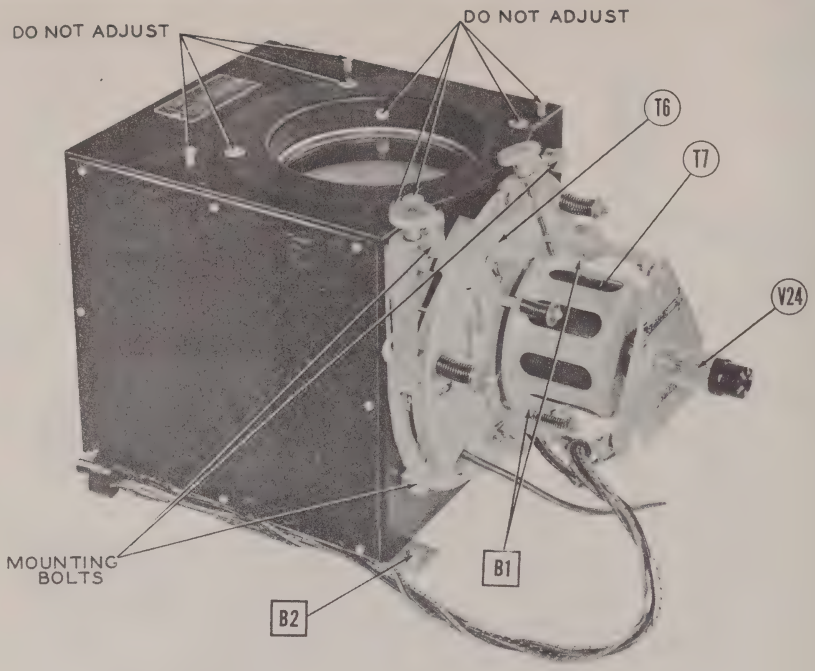
Be sure to remove the 10Ω resistor after the adjustment is made.



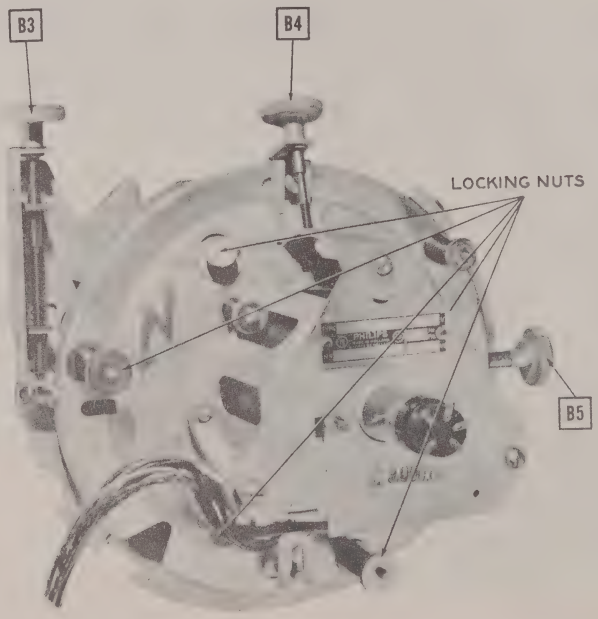
CABINET-REAR VIEW



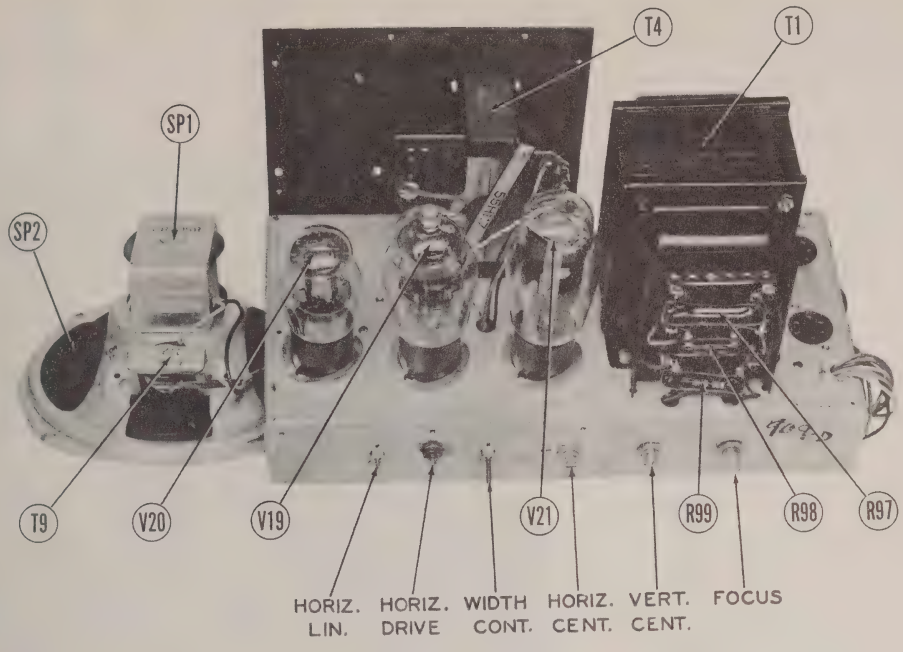
RF TUNER-RIGHT SIDE



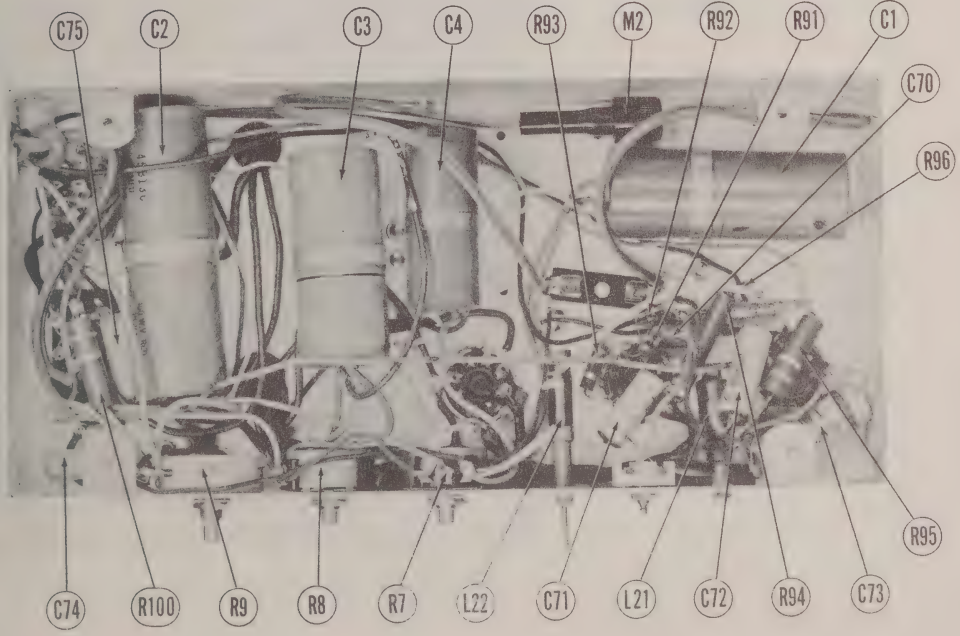
PROJECTION UNIT



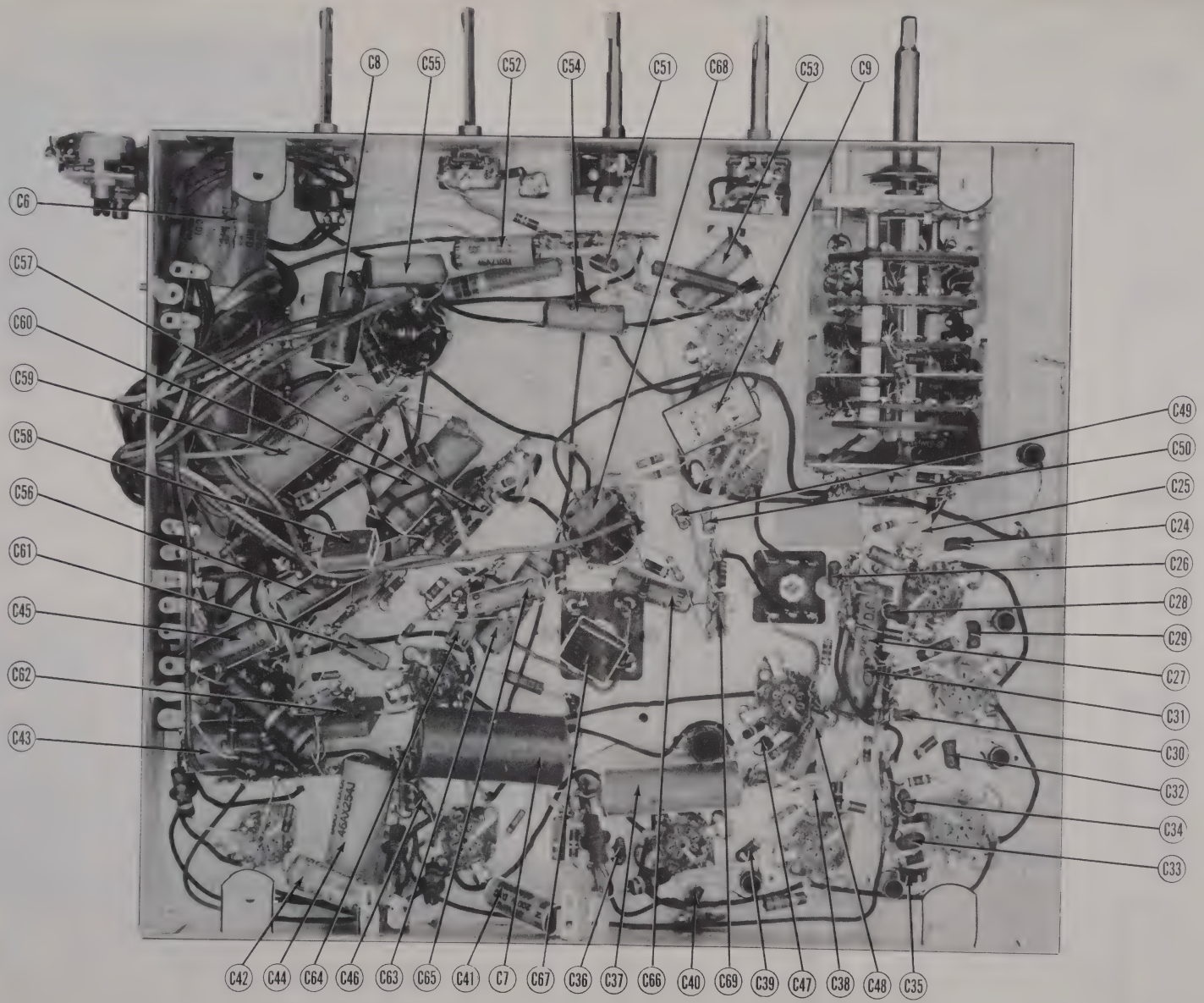
DEFLECTION AND FOCUS COIL ASSEMBLY



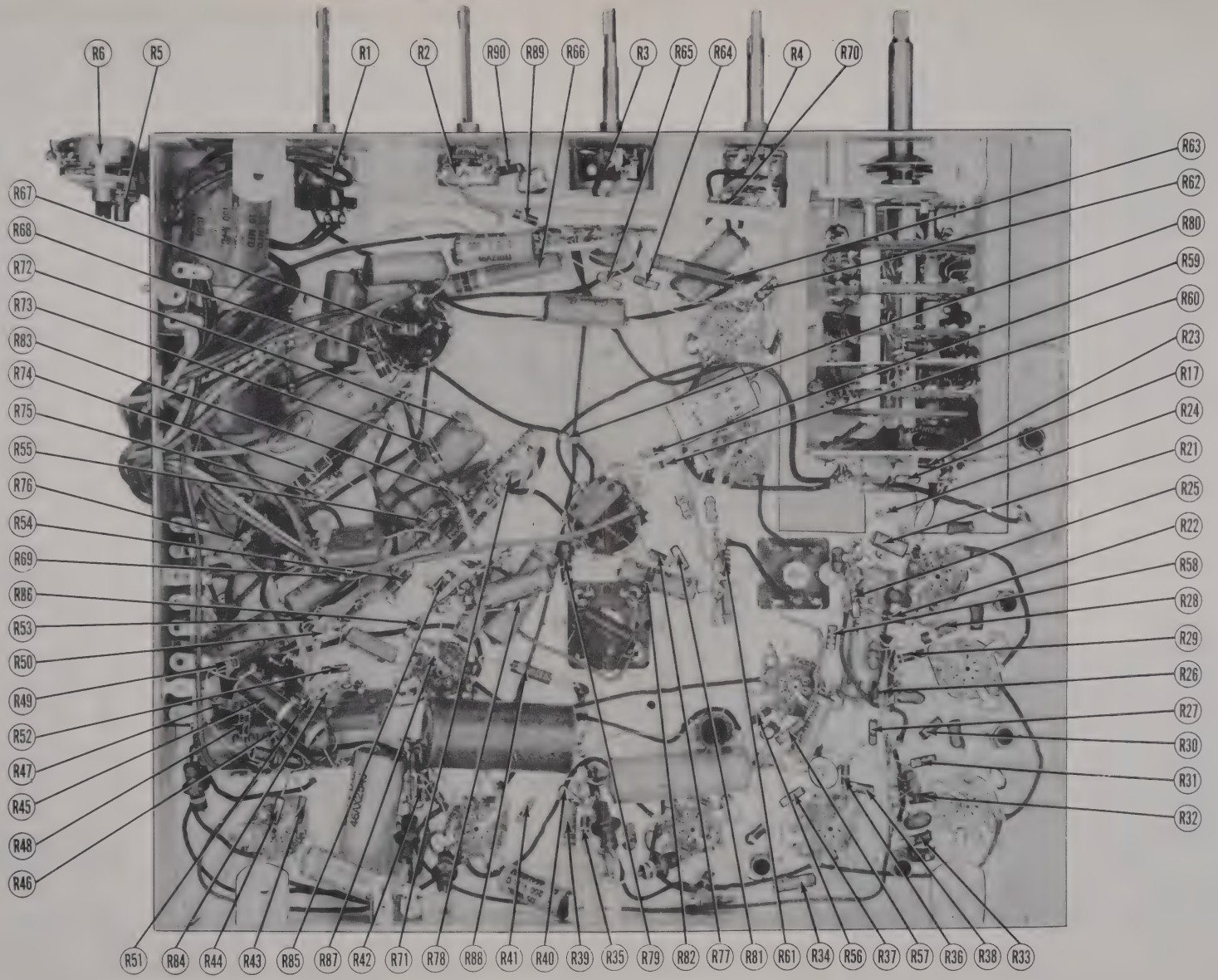
POWER SUPPLY CHASSIS-TOP VIEW



POWER SUPPLY CHASSIS-BOTTOM VIEW



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	PIN 9
V1	6BH6	-.3VDC	.2VDC	0V	6.3VAC	165VDC	75VDC	0V		
V2	6AQ5	-.8VDC	0V	0V	6.3VAC	150VDC	100VDC	0V		
V3	6C4	120VDC	0V	0V	6.3VAC	120VDC	$-3.8VDC	3.2VDC		
V4	6AU6	-.6VDC	0V	6.3VAC	0V	100VDC	100VDC	0V		
V5	6AU6	-.5VDC	0V	6.3VAC	0V	100VDC	100VDC	.4VDC		
V6	6AU6	-.3VDC	0V	6.3VAC	0V	100VDC	100VDC	.4VDC		
V7	6AU6	-.2VDC	0V	6.3VAC	0V	120VDC	100VDC	.4VDC		
V8	6AL5	0V	0V	6.3VAC	0V	.4VDC	0V	-2.8VDC		
V9	6AU6	-.2VDC	0V	6.3VAC	0V	145VDC	112VDC	0V		
V10	6AQ5	0V	16.5VDC	6.3VAC	0V	240VDC	240VDC	0V		
V11	12AU7	2.4VDC	0V	1.6VDC	6.3VAC	6.3VAC	100VDC	0V	5VDC	0V
V12	6AU6	-.6VDC	0V	6.3VAC	0V	24VDC	24VDC	0V		
V13	6AL5	0V	0V	6.3VAC	0V	.2VDC	0V	-.2VDC		
V14	6AU6	0V	0V	6.3VAC	0V	75VDC	25VDC	1VDC		
V15	6K6GT	0V	0V	180VDC	185VDC	0V	0V	6.3VAC	14VDC	
V16	6SN7GT	-6.2VDC	55VDC 127VDC	0V	-.2VDC	330VDC	6VDC 18VDC	6.3VAC	0V	
V17	6AL5	0V	0V	6.3VAC	0V	1VDC	0V	-.5VDC		
V18	6SN7GT	-2.7VDC	118VDC	10.5VDC	.1VDC	300VDC	10.5VDC	6.3VAC	0V	
V19	6BG6G	0V	6.3VAC	8.7VDC	0V	-.4VDC	0V	0V	270VDC	TOP CAP †
V20	5V4G	0V	400VDC	0V	†	0V	†	0V	400VDC	
V21	5U4G	0V	380VDC	0V	370VAC	0V	370VAC	0V	380VDC	
V22	6SR7	0V	-55VDC	80VDC	-125VDC	-125VDC	340VDC	6.3VAC	0V	
V23	6BG6G	-100VDC	6.3VAC	11VDC	-104VLC	-100VDC	-125VDC	0V	340VDC	TOP CAP †
V24	3NP4	1.4VDC	6.3VAC	0V	0V	85VDC				

† Do not measure

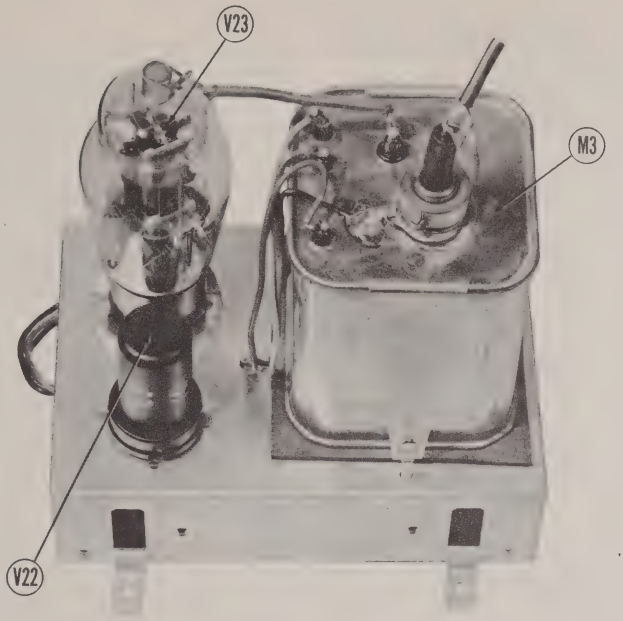
§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

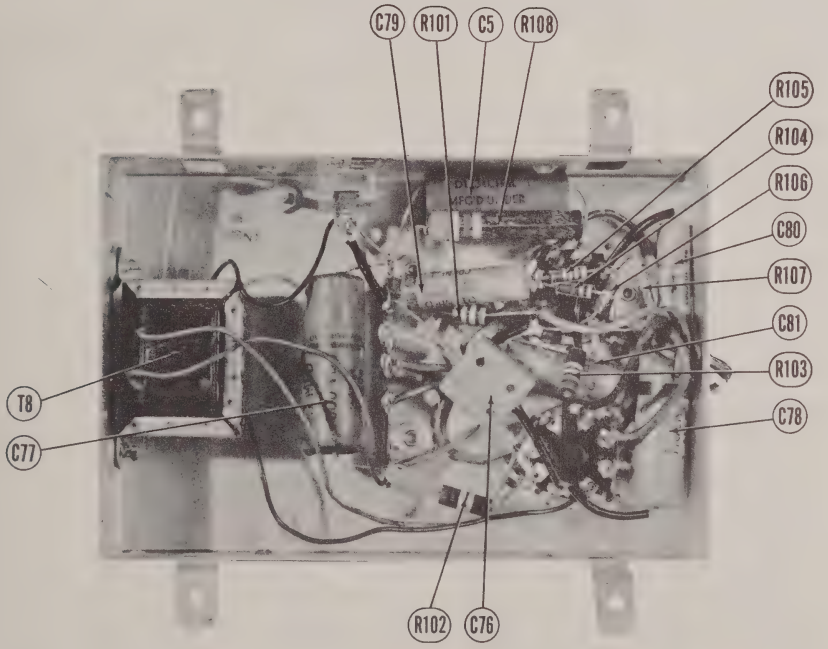
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	PIN 9
V1	6BH6	470KΩ	100Ω	0Ω	.2Ω	*13KΩ	*40KΩ	0Ω		
V2	6AQ5	1 Meg.	0Ω	0Ω	.2Ω	*8KΩ	*90KΩ	0Ω		
V3	6C4	*10KΩ	Inf.	0Ω	.2Ω	*10KΩ	22KΩ	470Ω		
V4	6AU6	500KΩ	0Ω	.2Ω	0Ω	*6.5KΩ	*6.5KΩ	0Ω		
V5	6AU6	440KΩ	0Ω	.2Ω	0Ω	*6.5KΩ	*6.5KΩ	82Ω		
V6	6AU6	400KΩ	0Ω	.2Ω	0Ω	*6.5KΩ	*6.5KΩ	82Ω		
V7	6AU6	600KΩ	0Ω	.2Ω	0Ω	*13KΩ	*6.5KΩ	82Ω		
V8	6AL5	.1Ω	0Ω	.2Ω	0Ω	Inf.	0Ω	5.5KΩ		
V9	6AU6	1 Meg.	0Ω	.2Ω	0Ω	*6.5KΩ	*4.5KΩ	0Ω		
V10	6AQ5	1 Meg.	680Ω	.2Ω	0Ω	*4.8KΩ	*4.8KΩ	1 Meg.		
V11	12AU7	*470KΩ	0Ω	270KΩ	.2Ω	.2Ω	*13KΩ	1 Meg.	3.9KΩ	0Ω
V12	6AU6	150KΩ	0Ω	.2Ω	0Ω	*22KΩ	*22KΩ	0Ω		
V13	6AL5	Inf.	Inf.	.2Ω	0Ω	10KΩ	0Ω	10KΩ		
V14	6AU6	1 Meg.	0Ω	.2Ω	0Ω	*470KΩ	*2.2Meg.	330Ω		
V15	6K6GT	0Ω	0Ω	*2.2KΩ	*2KΩ	470KΩ	Inf.	.2Ω	680Ω	
V16	6SN7GT	2 Meg.	*2.2Meg. *1 Meg.	0Ω	2.2 Meg.	*750Ω	5.5Ω 560Ω	.2Ω	0Ω	
V17	6AL5	5.6KΩ	5.6KΩ	.2Ω	0Ω	5 Meg.	0Ω	5 Meg.		
V18	6SN7GT	68KΩ	* 1 Meg.	1000Ω	5 Meg.	*600KΩ	1000Ω	.2Ω	0Ω	
V19	6BG6G	Inf.	0Ω	82Ω	Inf.	1 Meg.	Inf.	0Ω	*4.5KΩ	TOP CAP *700KΩ
V20	5V4G	Inf.	*700KΩ	Inf.	20KΩ	Inf.	20KΩ	0Ω	*700KΩ	
V21	5U4G	Inf.	21KΩ	Inf.	24Ω	Inf.	22Ω	Inf.	21KΩ	
V22	6SR7	0Ω	400KΩ	17KΩ	270KΩ	270KΩ	*300Ω	.2Ω	0Ω	
V23	6BG6G	560KΩ	.2Ω	400Ω	220KΩ	560KΩ	270KΩ	0Ω	*170Ω	TOP CAP *450Ω
V24	3NP4	*330K	.2Ω	0Ω	0Ω	5KΩ				

* Measured from Pin 2 of V21 (5U4G)

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to c om-com negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panel controls set at maximum except brightness control which is set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



HIGH VOLTAGE SUPPLY - TOP VIEW



HIGH VOLTAGE SUPPLY - BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DELCO PART No.	STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6BH6	6BH6	7CM	
V2	Mixer	6AG5	6AG5	7BD	
V3	Oscillator	6C4	6C4	6BG	
V4	1st Video IF Amp.	6AU6	6AU6	7BK	
V5	2nd Video IF Amp.	6AU6	6AU6	7BK	
V6	3rd Video IF Amp.	6AU6	6AU6	7BK	
V7	4th Video IF Amp.	6AU6	6AU6	7BK	
V8	Video Det. & AGC.	6AL5	6AL5	6BT	
V9	1st Video Amp.	6AU6	6AU6	7BK	
V10	Video Output	6AQ5	6AQ5	7BZ	
V11	Sync. Sep.-Inst.-Sync	6SN7GT	6SN7GT	8BD	
V12	Phase Inverter	12AU7	12AU7	9A	
V13	Sound IF Amp	6AU6	6AU6	7BK	
V14	Ratio Detector	6AL5	6AL5	6BT	
V14	Audio Amp.	6AU6	6AU6	7BK	
V15	Audio Output	6K6GT	6K6GT	7S	
V16	Vert. Osc.-Vert. Amp	6SN7GT	6SN7GT	8BD	
V17	Sync. Discrim-inator	6AL5	6AL5	6BT	
V16	Horiz. Osc.	6SN7GT	6SN7GT	8BD	
V19	Horiz. Amp.	6BG6G	6BG6G	5BT	
V20	Damper	5V4G	5V4G	5L	
V21	L.V. Rectifier	5U4G	5U4G	5T	
V22	H.V. Rec.	6BR7	6BR7	8Q	
V23	HV Amp.	6BG6G	6BG6G	5BT	
V24	Projection tube	3NP4	3NP4		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	45B137					Red Filter
C1B	40	450						Red Filter
C2	80	450	45B136					Filter
C3A	40	350	45B138					Red Filter
C3B	30	250						Yel. "
C3C	20	150						Blue "
C4A	250	10	45B134					Red Hor. Cent. Bypass
C4B	1000	6						Yel. Vert. " "
C5	20	450	45A040	PRS50/25	BR205	M-25-50	TA-525	H. V. Amp. Cath. Bypass
C6A	10	450	45B135					Red Filter
C6B	10	450						Red Filter
C6C	10	450						Blue
C6D	150	50						Yl. Vert. Amp. Cath. Bypass
C7A	8	300	45B139					Decoupling
C7B	8	300						
C8	10	25	45A121					Output Cath. Bypass
C9	5	50	45A109					Stabilizing Cap.
C10	680		47B20A681M5					Ant. Coupling Cer.
C11	680		47B20A681M5					RF Cath. Bypass "
C12	680		47B20A681M5					AGC Filter "
C13	680		47B20A681M5					RF Screen Bypass "
C14	680		47B20A681M5					RF Bypass "
C15	56		47B20W470K5					RF Coupling ± 5% "
C16	.68		47B36-1					RF Coupling Bakelite
C17	.68		47A160-1					" " "
C18	1.5		47A160-3					" " "
C19	25		47B20A250K5					RF Coupling ± 5% Cer.
C20	1.5		47A160-3					Osc. Coupling Bakelite
C21	8		47A192-5					Osc. Feedback ± 5% Cer.
C22	680		47B20A681M5					Osc. Feedback Cer.
C23	680		47B20A681M5					Osc. Fil Bypass. "
C24	100		47B3101K5	1468-0001	5W5T1	M0.5-31	1FM-31	IF Coupling "
C25	3000		47A198	1467-005	1D5D5	MW.5-25	1FM-25	Mixer Plate Decoup. Cer.
C26	1000		47B20A102N5	1468-001	1W5D1	MW.5-21	1FM-21	AGC Filter Cer.
C27	1000	200	44A7254J	P488-25	GT2P25	ST-2-25	68P24	AGC "
C28	1000		47B20A102N5	1468-001	1W5D1	MW.5-21	1FM-21	1st IF Screen Bypass "
C29	100		47B3101K5	1468-0001	5W5T1	M0.5-31	1FM-31	IF Coupling "
C30	1000		47B2A102N5	1468-001	1W5D1	MW.5-21	1FM-21	2nd IF Screen Bypass "
C31	100		47B3101K5	1468-0001	5W5T1	M0.5-31	1FM-31	AGC Filter "
C32	100		47B3101K5	1468-0001	5W5T1	M0.5-31	1FM-31	IF Coupling "
C33	1000		47B2A102N5	1468-001	1W5D1	MW.5-21	1FM-21	3rd IF Screen Bypass "
C34	1000		47B20A102N5	1468-001	1W5D1	MW.5-21	1FM-21	AGC Filter "
C35	100		47B2010IK5	1468-0001	5W5T1	M0.5-31	1FM-31	IF Coupling "
C36	1000		47B20A102N5	1468-001	1W5D1	MW.5-21	1FM-21	RF Bypass "
C37	.25	200	44A7254J	P488-25	GT2P25	ST-2-25	68P24	AGC Filter
C38	5000		47A168	1467-005	1D5D5	MW.5-25	1FM-25	4th IF Screen Bypass "
C39	100		47B2010IK5	1468-0001	5W5T1	M0.5-31	1FM-31	IF Coupling "
C40	10		47A160-11	1469-00001	5R5Q1	M05.5-41	MS-41	RF Bypass Bakelite
C41	05	200	46AU50GJ	P288-05	GT2S5	ST-4-05	TM-15	Video Coupling
C42	05	600	46AT50GJ	P688-05	GT6S5	ST-6-05	TM-15	" "
C43	.1	600	46A1254J	P688-1	GT6P1	ST-6-1	TM-1	" "
C44	.25	600	46A4254J	684-25	GT6P25	ST-6-25	TC-2	" "
C45	05	600	46AT50GJ	P688-05	GT6S5	ST-6-05	TM-15	Sync. Coupling
C46	1.5		47A160-3					Sound Coupling Bakelite
C47	100		47B2010IK5	1468-0001	5W5T1	M0.5-31	1FM-31	" " Cer.
C48	22	200	46A4152J	P488-01	GT2S1	ST-4-01	TM-11	S. IF Screen Bypass
C49	330		47B2330K5	1468-0003	5W5T3	M0.5-33	1FM-33	Diode Load Cap. Cer.
C50	330		47B2330K5	1468-0003	5W5T3	M0.5-33	1FM-33	" " " "
C51	2000		47B20A102N5	1468-001	1W5D1	MW.5-21	1FM-21	De-emphasis "
C52	01	600	46AZ103J	P688-01	GT6S1	ST-6-01	TM-11	Audio Coupling
C53	01	600	46AZ103J	P688-01	GT6S1	ST-6-01	TM-11	AF Screen Bypass
C54	01	600	46AZ103J	P688-01	GT6S1	ST-6-01	TM-11	Audio Coupling

CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C55	01	600	46AZ103J	P688-01	GT6S1	ST-6-01	TM-11	Output Plate Bypass
C56	002	600	46A2202J	P688-002	GT6D2	ST-6-002	TM-22	Integrator Net.
C57	005	600	46A2502J	P688-005	GT6D5	ST-6-005	TM-25	" "
C58	4700	500	CM35A472K	1467-005	1D5D5	MW.5-25	1FM-25	Vert. Osc. Grid Cap.
C59	.25	600	46A4254J	684-25	GT6P25	ST-6-25	TC-2	Vert. Coupling
C60	.1	600	46AY104J	P688-1	GT6P1	ST-6-1	TM-1	Vert. Discharge
C61	1500	500	CM20A152K	1467-0015	1W5D15	MW.5-215	1FM-215	Sync. Coupling
C62	1500	500	CM20A152K	1467-0015	1W5D15	MW.5-215	1FM-215	" "
C63	02	600	46AY203J	P688-02	GT6S2	ST-6-02	TM-12	AFC Filter
C64	005	600	46AZ502J	P688-005	GT6D5	ST-6-005	TM-25	Feedback
C65	005	600	46AZ502J	P688-005	GT6D5	ST-6-005	TM-25	Hor. Coupling
C66	005	600	46AZ502J	P688-005	GTuD5	ST-u-005	TM-25	AFC Filter
C67	6200	500	CM55B622J					Fixed Trimmer
C68	330	500	CM20A331K	1468-0003	5W5T3	M0.5-33	1FM-33	Hor. Osc. Feedback
C69	390		CM20A391M	1469-0004	5R5T4	M05.5-34	MS-34	Hor. Discharge ± 5% Cer.
C70	390	500	47B20391K5	1468-0004	5W5T4	M0.5-34	1FM-34	Hor. Coupling
C71	01	600	46AZ103J	P688-01	GT6S1	ST-6-01	TM-11	Hor. Amp. Screen Bypass
C72	.035	600	46AY353J	P688-033				Damper Filter
C73	.1	600	46AY104J	P688-1	GT6P1	ST-6-1	TM-1	" "
C74	01	600	46BR103L6	P688-01	GT6S1	ST-6-01	TM-11	Line Filter
C75	01	500	46BR103L6	P688-01	GT6S1	ST-6-01	TM-11	" "
C76	2700	500	CM30A272J	1467-0025	1W5D25	MW.5-225		H. V. Osc. Grid Cap.
C77	.1	600	46AY104J	P688-1	GT6P1	ST-6-1	TM-1	RF Bypass
C78	.1	400	46AY104J	P488-1	GT4P1	ST-4-1	TM-1	H. V. Osc. Cath. Bypass
C79	01	600	46AZ103J	P688-01	GT6S1	ST-6-01	TM-11	H. V. Coupling
C80	015	400	46AU153J	P488-015	GT6S15	ST-6-02	TM-12	Bias Filter
C81	03	400	46AW303J	P488-03	GT4S3	ST-6-03	TM-13	" "

* When either Items C49 or C50 are replaced, replace both with capacitors of equal value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: DELCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	25B785	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	E	KSS-3	Attach to R1A Per Instructions
C	Switch		"	41	SW-A	" " "
R2A	50KΩ	½	25B784	D11-123	AM-44-S	Brightness Control
B	Shaft		Not Req.	E	KSS-3	Attach to R2A Per Instructions
R3A	25000Ω	½	25B783			Contrast Control
B	Shaft		Not Req.			Attach to R3A Per Instructions
R4A	1 Meg.	½	25B786			Vert. Hold Control Dual Concentric
B	50K	½				Horiz. " " "
R5A	2.5 Meg	½	25B768		M-63-S	Height Control
B	Shaft		Not Req.		Not Req.	Attach to R5A Per Instructions
R6A	5000Ω	½	25B769		M-19-S	Vert. Linearity
B	Shaft		Not Req.		Not Req.	Attach to R6A Per Instructions
R7	20Ω	2	25B707	W-20	58-20	Horiz. Centering Control
R8	20Ω	2	25B706	W-20X-10	43-20CT	" " Tapped @ 1Ω
R9	500Ω	4	25B709	W-500	58-500	Focus Control. " "

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: DELCO PART No.	IRC PART No.	IDENTIFICATION CODES
					All resistors are ± 10% unless otherwise stated.
R10	100Ω	½	RC20AE101M		Br.-Blk.-Br. RF Cathode 20%
R11	22KΩ	½	RC20AE223M		Red-Red-Or. RF Grid "
R12	33KΩ	½		BTS-33K	Or.-Or.-Or. RF Screen Decoupling "
R13	10KΩ	1	RC30AE103M		Br.-Blk.-Or. RF Plate "
R14	4700Ω	½	RC20AE472K		Yl.-Vi.-Red Mixer Coil Shunt "
R15	1 Meg	½	RC20AE105M		Br.-Blk.-Grn. Mixer Grid "
R16	82KΩ	½	RC20AE823M	BTS-82K	Gray-Red-Or. " Screen Decoupling "
R17	4700Ω	½	RC20AE472K	BTS-4700	Yl.-Vi.-Red " Plate Decoupling "
R18	22KΩ	½	RC20AE223M		Red-Red-Or. Oscillator Grid "
R19	470Ω	½			Yl.-Vi.-Br. " Cathode "
R20	6800Ω	1	RC30AE682M		Blue-Gray-Red " Plate "
R21	12KΩ	½	RC20AE123K		Br.-Red-Or. 1st Video IF Grid
R22	2200Ω	½	RC20AE222K	BTS-2200	Red-Red-Red " " " Decoupling
R23	1 Meg	½	RC20AE105M	BTS-1 Meg	Br.-Blk.-Grn. AGC Network
R24	100KΩ	½	RC20AE104K	BTS-100K	Br.-Blk.-Yl. " "
R25	100KΩ	½	RC20AE104K	BTS-100K	Br.-Blk.-Yl. " "
R26	100KΩ	½	RC20AE104K	BTS-100K	Br.-Blk.-Yl. " "
R27	100KΩ	½	RC20AE104K	BTS-100K	Br.-Blk.-Yl. " "
R28	5600Ω	½	RC20AE562K		Grn.-Blue-Red 2nd Video IF Grid
R29	82Ω	½	RC20AE820K		Gray-Red-Blk. " " " Cathode
R30	2200Ω	½	RC20AE222K	BTS-2200	Red-Red-Red " " " Decoupling
R31	4700Ω	½	RC20AE472K		Yl.-Vi.-Red 3rd Video IF Grid
R32	82Ω	½	RC20AE820K		Gray-Red-Blk. " " " Cathode
R33	2200Ω	½	RC20AE222K	BTS-2200	Red-Red-Red " " " Decoupling
R34	5600Ω	½	RC20AE562K		Grn.-Blue-Red 4th Video IF Grid
R35	220K	½	RC20AE224K	BTS-220K	Red-Red-Yl. AGC Network
R36	82Ω	½	RC20AE820K		Gray-Red-Blk. 4th Video IF Cathode
R37	6800Ω	½	RC20AE682M	BTS-6800	Blue-Gray-Red " " " Plate
R38	2200Ω	½	RC20AE222K	BTS-2200	Red-Red-Red " " " Decoupling
R39	5600Ω	½	RC20AE562K	BTS-5600	Grn.-Blue-Red Video Detector Load
R40	470KΩ	½	RC20AE474K	BTS-470K	Yl.-Vi.-Yl. AGC Network
R41	1 Meg	½	RC20AE105M	BTS-1 Meg	Br.-Blk.-Grn. 1st Video Amp. Grid 20%
R42	3300Ω	1	RC30AE332K	BTA-3300	Or.-Or.-Red " " " Plate "
R43	1 Meg	½	RC20AE105M	BTS-1 Meg	Br.-Blk.-Grn. 2nd " " " Grid "
R44	680Ω	½	RC20AE681K	BTS-680	Blue-Gray-Br. " " " Cathode
R45	4700Ω	2	RC40AE472K	BT-2-4700	Yl.-Vi.-Red " " " Plate
R46	47KΩ	½	RC20AE473K	BTS-47K	Yl.-Vi.-Or. Picture Tube Grid
R47	27K	½	RC20AE273K	BTS-27K	Red-Red-Or. Voltage Divider
R48	1 Meg	½	RC20AE105K	BTS-1 Meg	Br.-Blk.-Grn. Sync. Sep. Plate
R49	270KΩ	½	RC20AE274K	BTS-270K	Red-Vi.-Yl. DC Restorer Cathode
R50	3900Ω	½	RC20AE392K	BTS-3900	Or.-White-Red Sync. Phase Inv. Plate
R51	3900Ω	½	RC20AE392K	BTS-3900	Or.-White-Red " " " Grid
R52	1 Meg	½	RC20AE105M	BTS-1 Meg	Br.-Blk.-Grn. " " " Grid 20%
R53	15KΩ	½	RC20AE153K	BTS-15K	Br.-Grn.-Or. Integrator Network
R54	8200Ω	½	RC20AE822K	BTS-8200	Gray-Red-Red " "
R55	8200Ω	½	RC20AE822K	BTS-8200	Gray-Red-Red " "
R56	150KΩ	2	CR20A5154K	BTS-150K	Br.-Grn.-Yl. 1st Sound IF Grid
R57	12KΩ	½	RC20AE123K	BTS-12K	Br.-Red-Or. " " " Bleeder
R58	33KΩ	½	RC20AE333K	BTS-33K	Or.-Or.-Or. " " " Decoupling
R59	10KΩ	½	RC20AE103J	BTS-10K-5%	Br.-Blk.-Or. Detector Load 5%
R60	10KΩ	½	RC20AE103J	BTS-10K-5%	Br.-Blk.-Or. " " "

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: DELCO PART No.	IRC PART No.	IDENTIFICATION CODES
R61	33KΩ	½	RC20AE333K	BTS-33K	Or.-Or.-Or. De-emphasis
R62	33Ω	½	RC20AE331K	BTA-330	Or.-Or.-Br. 1st Audio Cathode
R63	68KΩ	1	RC30AE683K	BTA-68K-5%	Blue-Gray-Or. Voltage Divider 5%
R64	2.2 Meg	½	RC20AE225M	BTS-2.2 Meg	Red-Red-Grn. 1st Audio Screen Dropping
R65	470KΩ	½	RC20AE474K	BTS-470K	Yl.-Vi.-Yl. " " Plate
R66	1000Ω	1	RC30AE102K	BTS-1000	Br.-Blk.-Red Filter
R67	470K	½	RC20AE474K	BTS-470K	Yl.-Vi.-Yl. Output Grid
R68	680Ω	1	RC30AE681K	BTA-680	Blue-Gray-Br. " Cathode
R69	1.2 Meg	½	RC20AE125K	BTS-1.2 Meg	Br.-Red-Grn. Vertical Osc. Grid
R70	1.5 Meg	½	RC20AE155K	BTS-1.5 Meg	Br.-Grn.-Grn. " "
R71	100KΩ	½	RC20AE104K	BTS-100K	Br.-Blk.-Yl. Voltage Divider
R72	6.8 Meg	½	RC20AE685M	BTS-6.8 Meg	Blue-Gray-Grn. " "
R73	1.5 Meg	½	RC20AE155K	BTS-1.5 Meg	Br.-Grn.-Grn. Vertical Osc. Plate
R74	560Ω	½	RC20A5561K	BTS-560	Grn.-Blue-Br. " Amp. Cathode
R75	3300Ω	½	RC20AE332K	BTS-3300	Or.-Or.-Red Peaking
R76	2.2 Meg	½	RC20AE225M	BTS-2.2 Meg	Red-Red-Grn. Vertical Amp. Grid
R77	1000Ω	½	RC20AE102K	BTS-1000	Br.-Blk.-Red Horiz. Osc. Cathode
R78	470K	½	RC20A474K	BTS-470K	Yl.-Vi.-Yl. " " AFC Filter
R79	5600Ω	½	RC20AE562K	BTS-5600	Grn.-Blue-Red " " Plate
R80	68KΩ	½	RC20AE683K	BTS-68K	Blue-Gray-Or. " " Grid
R81	270KΩ	½	RC20AE274K	BTS-270K	Red-Vi.-Yl. " " Plate
R82	4700Ω	½	RC20A5472K	BTS-4700	Yl.-Vi.-Red Peaking
R83	2200Ω	½	RC20AE222K	BTS-2200	Red-Red-Red Filter
R84	3900Ω	½	RC20AE392K	BTS-3900	Or.-White-Red Sync. Phase Inv. Cathode
R85	4.7 Meg	½	RC20AE475M	BTS-4.7 Meg	Yl.-Vi.-Grn. " Disc. Load
R86	100K	½	RC20AE104K	BTS-100K	Br.-Blk.-Yl. " Discriminator Load
R87	100K	½	RC20A5104K	BTS-100K	Br.-Blk.-Yl. " " "
R88	5600Ω	½	RC20AE562K	BTS-5600	Grn.-Blue-Red " " Cathode
R89	47KΩ	½	RC20AE473K	BTS-47K	Yl.-Vi.-Or. Voltage Divider
R90	5600Ω	½	RC20AE562K	BTS-5600	Grn.-Blue-Red Voltage Divider
R91	472	½	RC20AE470K		Yl.-Vi.-Blk. Parasitic Suppressor
R92	1 Meg	½	RC20AE105M	BTS-1 Meg	Br.-Blk.-Grn. Horiz. Amp. Grid
R93	82Ω	½	RC30AE820K		Gray-Red-Blk. " " Cathode
R94	4700Ω	2	RC40AE472K	BT-2-4700	Yl.-Vi.-Red " " " Screen Decoupling
R95	1800Ω	2	RC40AE182K	BT-2-1800	Br.-Gray-Red " " " Plate Decoupling
R96	82Ω	1	RC30AE822K	BTA-8200	Gray-Red-Red " "
R97	2000Ω	20	24BH202E	DQ-2000	Filter
R98	2500Ω	5	24BF252E	AB-2500	"
R99	200Ω	10	24BG201E	AB-200	"
R100	1800Ω	2	RC40A5182K	BT-2-1800	Br.-Gray-Red Focus Coil Shunt
R101	390KΩ	1	RC30A5394J	BTA-390K-5%	Or.-White-Yl. HV Osc. Grid 5%
R102	220KΩ	1	RC30A5224K	BTA-220K	Red-Red-Yl. Voltage Divider
R103	18KΩ	1	RC30AE183K	BTA-18K	Br.-Gray-Or. HV Osc. Cathode
R104	330Ω	½	RC20A5331K	BTA-330	Or.-Or.-Br. Parasitic Suppressor 20%
R105	330KΩ	½	RC20A5334K	BTS-330K	Or.-Or.-Yl. HV Amp. Grid
R106	220KΩ	½	RC20AE224J	BTS-220K-5%	Red-Red-Yl. HV " " 5%
R107	47KΩ	½	RC20AE473J	BTS-47K-5%	Yl.-Vi.-Or. Bias Filter "
R108	390Ω	2	RC40AE391K	BW-2-390	Or.-White-Br. HV Amp. Cathode
R109A	1.65 Meg	½	23A074#		Br.-Grn.-Grn. " Filter
R109B	1.5 Meg	½	23A075§§		Br.-Grn.-Grn. " "

Special Screw end
§§ Special Spring end

RESISTORS

ITEM No.	RATING	REPLACEMENT DATA: DELCO PART No.	IRC PART No.	IDENTIFICATION CODES
R62	33Ω ½	RC20AE331K	BTA-330	Or.-Or.-Br. 1st Audio Cathode
R63	68KΩ 1	RC30AE683K	BTA-68K-5%	Blue-Gray-Or. Voltage Divider 5%
R64	2.2 Meg ½	RC20AE225M	BTS-2.2 Meg	Red-Red-Grn. 1st Audio Screen Dropping
R65	470KΩ ½	RC20AE474K	BTS-470K	Yl.-Vi.-Yl. " " Plate
R66	1000Ω 1	RC30AE102K	BTS-1000	Br.-Blk.-Red Filter
R67	470K ½	RC20AE474K	BTS-470K	Yl.-Vi.-Yl. Output Grid
R68	680Ω 1	RC30AE681K	BTA-680	Blue-Gray-Br. " Cathode
R69	1.2 Meg ½	RC20AE125K	BTS-1.2 Meg	Br.-Red-Grn. Vertical Osc. Grid
R70	1.5 Meg ½	RC20AE155K	BTS-1.5 Meg	Br.-Grn.-Grn. " "
R71	100KΩ ½	RC20AE104K	BTS-100K	Br.-Blk.-Yl. Voltage Divider
R72	6.8 Meg ½	RC20AE685M	BTS-6.8 Meg	Blue-Gray-Grn. " "
R73	1.5 Meg ½	RC20AE155K	BTS-1.5 Meg	Br.-Grn.-Grn. Vertical Osc. Plate
R74	560Ω ½	RC20A5561K	BTS-560	Grn.-Blue-Br. " Amp. Cathode
R75	3300Ω ½	RC20AE332K	BTS-3300	Or.-Or.-Red Peaking
R76	2.2 Meg ½	RC20AE225M	BTS-2.2 Meg	Red-Red-Grn. Vertical Amp. Grid
R77	1000Ω ½	RC20AE102K	BTS-1000	Br.-Blk.-Red Horiz. Osc. Cathode
R78	470K ½	RC20A474K	BTS-470K	Yl.-Vi.-Yl. " " AFC Filter
R79	5600Ω ½	RC20AE562K	BTS-5600	Grn.-Blue-Red " " Plate
R80	68KΩ ½	RC20AE683K	BTS-68K	Blue-Gray-Or. " " Grid
R81	270KΩ ½	RC20AE274K	BTS-270K	Red-Vi.-Yl. " " Plate
R82	4700Ω ½	RC20A5472K	BTS-4700	Yl.-Vi.-Red Peaking
R83	2200Ω ½	RC20AE222K	BTS-2200	Red-Red-Red Filter
R84	3900Ω ½	RC20AE392K	BTS-3900	Or.-White-Red Sync. Phase Inv. Cathode
R85	4.7 Meg ½	RC20AE475M	BTS-4.7 Meg	Yl.-Vi.-Grn. " Disc. Load
R86	100K ½	RC20AE104K	BTS-100K	Br.-Blk.-Yl. " Discriminator Load
R87	100K ½	RC20A5104K	BTS-100K	Br.-Blk.-Yl. " " "
R88	5600Ω ½	RC20AE562K	BTS-5600	Grn.-Blue-Red " " Cathode
R89	47KΩ ½	RC20AE473K	BTS-47K	Yl.-Vi.-Or. Voltage Divider
R90	5600Ω ½	RC20AE562K	BTS-5600	Grn.-Blue-Red Voltage Divider
R91	472 ½	RC20AE470K		Yl.-Vi.-Blk. Parasitic Suppressor
R92	1 Meg ½	RC20AE105M	BTS-1 Meg	Br.-Blk.-Grn. Horiz. Amp. Grid
R93	82Ω ½	RC30AE820K		Gray-Red-Blk. " " Cathode
R94	4700Ω 2	RC40AE472K	BT-2-4700	Yl.-Vi.-Red " " " Screen Decoupling
R95	1800Ω 2	RC40AE182K	BT-2-1800	Br.-Gray-Red " " " Plate Decoupling
R96	82Ω 1	RC30AE822K	BTA-8200	Gray-Red-Red " "
R97	2000Ω 20	24BH202E	DQ-2000	Filter
R98	2500Ω 5	24BF252E	AB-2500	"
R99	200Ω 10	24BG201E	AB-200	"
R100	1800Ω 2	RC40A5182K	BT-2-1800	Br.-Gray-Red Focus Coil Shunt
R101	390KΩ 1	RC30A5394J	BTA-390K-5%	Or.-White-Yl. HV Osc. Grid 5%
R102	220KΩ 1	RC30A5224K	BTA-220K	Red-Red-Yl. Voltage Divider
R103	18KΩ 1	RC30AE183K	BTA-18K	Br.-Gray-Or. HV Osc. Cathode
R104	330Ω ½	RC20A5331K	BTA-330	Or.-Or.-Br. Parasitic Suppressor 20%
R105	330KΩ ½	RC20A5334K	BTS-330K	Or.-Or.-Yl. HV Amp. Grid
R106	220KΩ ½	RC20AE224J	BTS-220K-5%	Red-Red-Yl. HV " " 5%
R107	47KΩ ½	RC20AE473J	BTS-47K-5%	Yl.-Vi.-Or. Bias Filter "
R108	390Ω 2	RC40A5391K	BW-2-390	Or.-White-Br. HV Amp. Cathode
R109A	1.65 Meg ½	23A074#		Br.-Grn.-Grn. " Filter
R109B	1.5 Meg ½	23A075§§		Br.-Grn.-Grn. " "

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA: DELCO PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
T1	117VAC @ 2.0A	740VAC CT @ .250ADC	5VAC @ 2A	6.6VAC @ 8.2A	52C170			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA: DELCO PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	NOTES
T2	40Ω		50B411				Hor. Osc. Trans.
T3	200Ω	120Ω	55B115	A-8111	TV24A88	A-3000	Vert. Block Osc. Trans.
T4	91Ω	142 TAP @ 12Ω	55C117				Hor. Output Trans.
T5	590Ω	7Ω	55C114	A-8115	TV24S86	A-3035	Vert. " "
T6A	15Ω						Hor. Deflection Yoke
B	60Ω						Vert. " "
T7	290Ω						Focus Coil
T8	145Ω	120Ω	52A176				High Volt Block Osc.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA: DELCO PART No.	STANCOR PART No.	THORDARN PART No.	MERIT PART No.	INSTALLATION NOTES
T9	8000Ω	3.6Ω	280Ω	3.2Ω	Part of 9SC079	A-2313	T22S47	A-2931	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: DELCO PART No.	MEISSNER PART No.	NOTES
L1	Ant. Coil	0Ω				Part of Tuner Assy. #10727
L2	" "	0Ω				" " " " "
L3	Ant. Input Coil	.22OT				" " " " "
L4	RF Plate Coils	0Ω				" " " " "
L5	RF Grid Coils	0Ω				" " " " "
L6	Osc. Coils	0Ω				" " " " "
L7	Fil. Choke	0Ω				" " " " "
L8	1st IF Coil	.1Ω		50A372-1		
L9	2nd IF Coil	.1Ω		50A372-1		
L10	3rd IF Coil	.1Ω		50A372-1		

DELCO MODEL TV-201

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

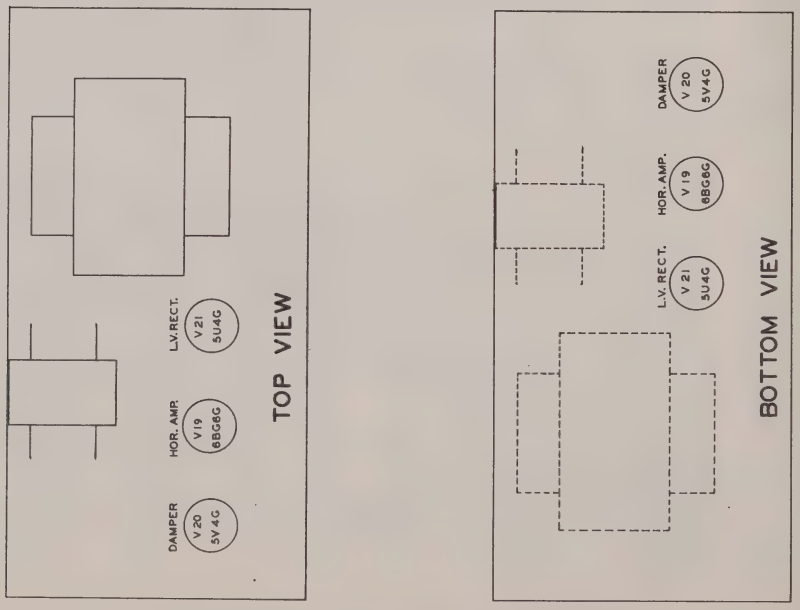
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA DELCO PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L11	4th IF Coil	.1Ω		50A372-1		
L12	Video Det. Coil	.1Ω		50A372-1		
L13	Peaking Coil	10Ω		51A1079		Wound on 39KΩ resistor
L14	Peaking Coil	11Ω		51A1080		" " 1 Meg. "
L15	Peaking Coil	7Ω		51A1087		" " 22KΩ "
L16	Peaking Coil	6.5Ω		51A1082		" " 1 Meg. "
L17	Peaking Coil	7Ω		51A1086		" " 22KΩ "
L18	Peaking Coil	6.5Ω		51A1082		" " 1 Meg. "
L19	Sound Trap	4.5Ω		51A1037		
L20	Ratio Det.	4.5Ω	1Ω	50B406		
L21	Hor. Linearity Control	35Ω		51B1071		
L22	Width Control	.5Ω		51B1072		

SPEAKER

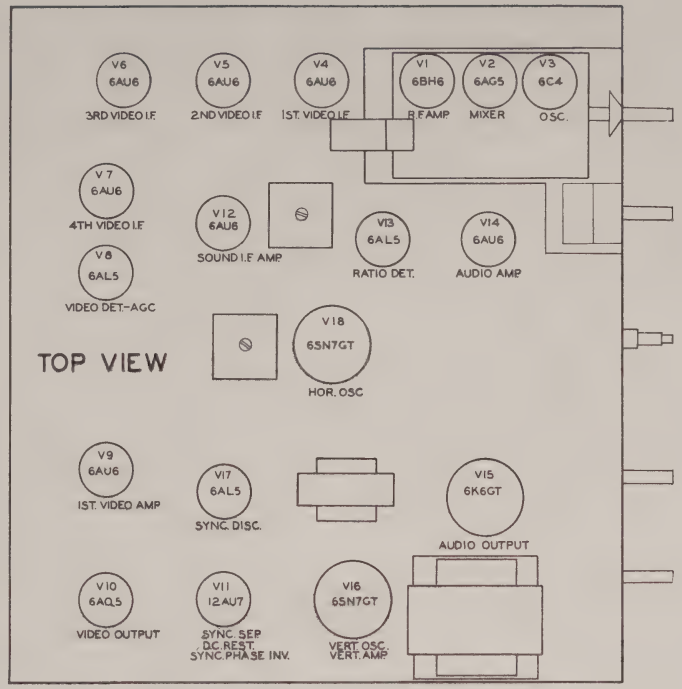
ITEM No.	RATING FIELD RES.	RATING V. C. IMP.	REPLACEMENT DATA DELCO PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	65Ω	3.6Ω	85C079			
	CONE DIA.	V. C. DIA.				
SP2	7 1/4"	3/4"				

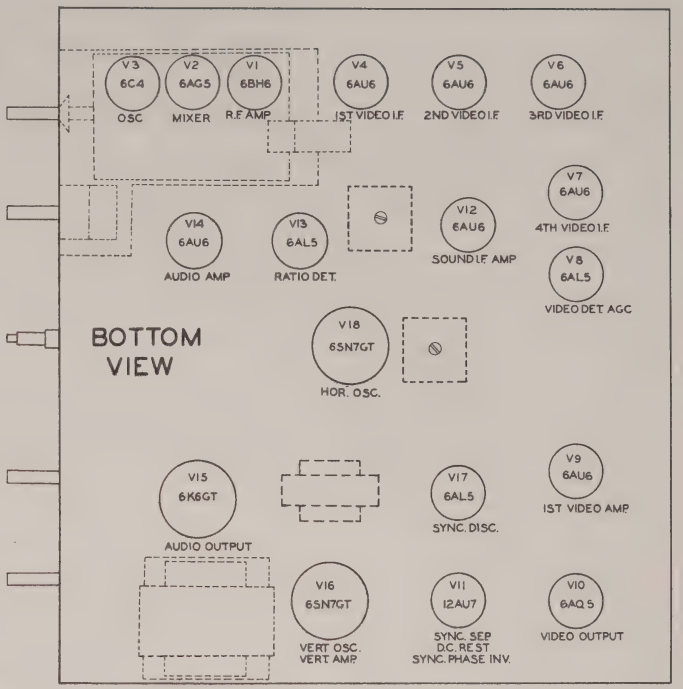
MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner Assy.	1C727	
M2	Fuse	39A334	Type 3AG- 1/4 Amp.
M3	H. V. Trans. Assy.	52A177	Includes Trans., Rectifier Tubes and Filter Capacitors.
	Screen, viewing	22C216	
	Mirror	22C221	
	Knob	15B148-2	Volume, Brightness, and Contrast
	"	15B147-2	Vertical (Front Section)
	"	15B146	Horiz. (Rear Section)
	"	15B150-2	Channel Selector (Front Section)
	"	15B151-1	Fine Tuning (Rear Section)
	Projection unit optical assy.	1X750	Contains Concave Mirror, 45 Degree Mirror and Corrector Lens.
	Projection unit mounting and alignment assy.	1X749	Contains Focus Coil, Deflection Coil, etc.
	Projection unit H. V. cable assy.	87A1677	Includes R109, Second Anode Connector, etc.

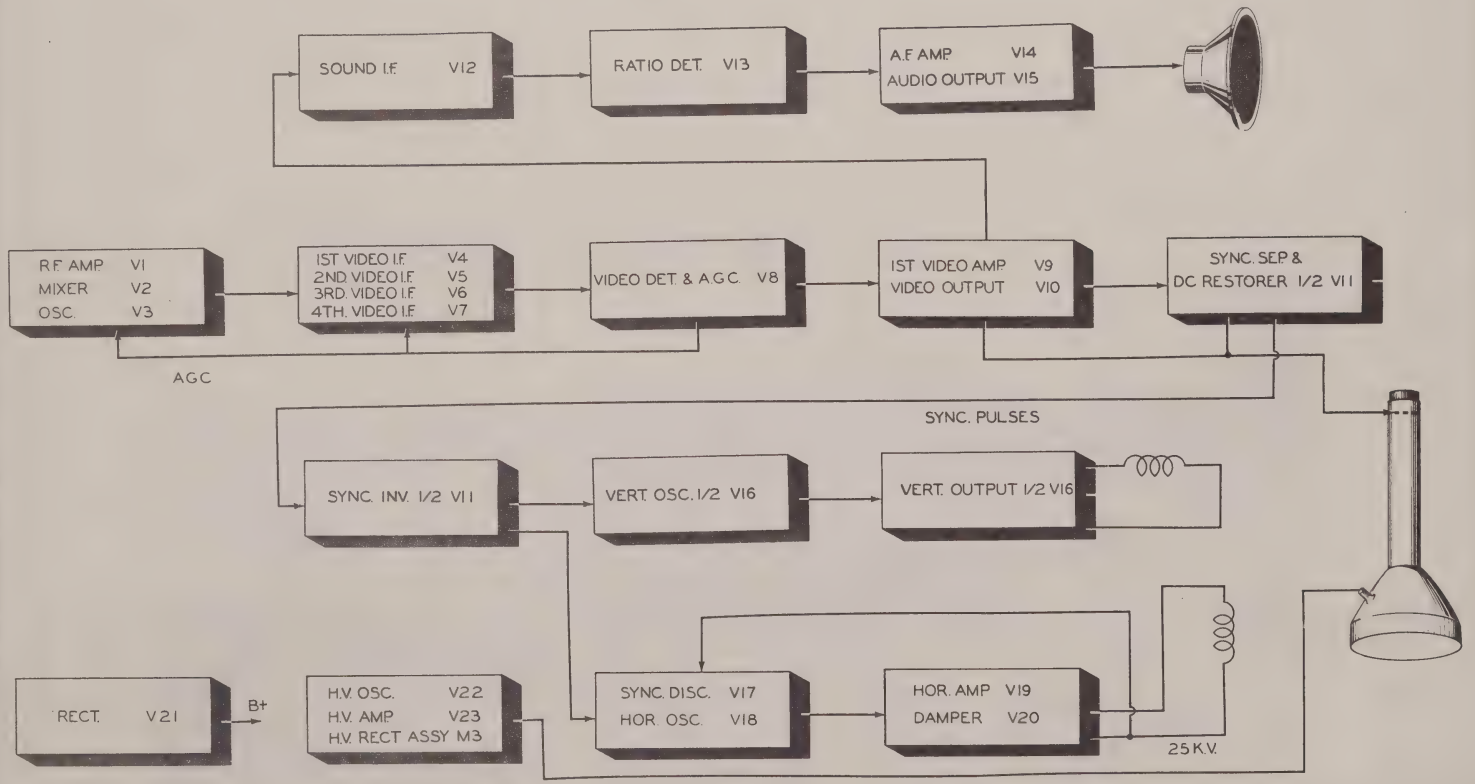


TUBE PLACEMENT CHART





TUBE PLACEMENT CHART



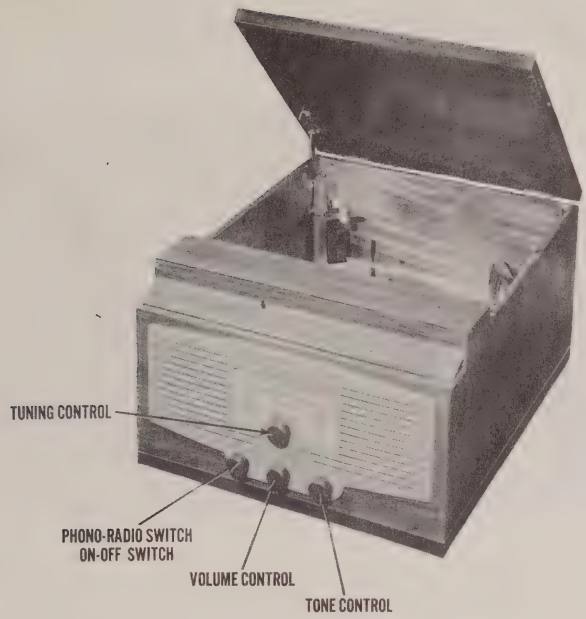
BLOCK DIAGRAM

DISASSEMBLY INSTRUCTIONS

1. Remove seven push-on type control knobs.
2. Remove screws holding back and remove back.
3. Remove three screws holding projection system.
4. Disconnect power cable plug, deflection cable plug, and remove picture tube socket from picture tube.
5. Remove three metal screws holding HV chassis mounting board to cabinet. Remove HV chassis and projection system.
6. Remove four phillips screws holding HV chassis to mounting board. Remove board.
7. Disconnect speaker plug and remove two plugs from LV power supply chassis.
8. Remove four screws holding LV power supply chassis. Remove LV chassis.
9. Remove four 11/32" hex nuts holding speaker. Remove speaker.
10. Remove four metal screws holding main chassis. Remove main chassis.

REMOVAL OF PROJECTION TUBE

1. Remove back from cabinet.
2. Unplug picture tube socket and deflection and focus cable.
3. Remove three screws holding projection unit and slide out of rear of cabinet.
4. Loosen four locking thumb nuts while holding deflection and focus coil assembly.
5. Turn assembly counter-clockwise just enough to align slots with locking thumb nuts. Carefully slide out of box. Use extreme care to prevent damage to mirror and tube.
6. Loosen bolt in plastic clamp on high voltage plug. Carefully slip plug out of tube with a rocking motion.
7. Loosen screw in clamp on neck. Slide tube forward out of bracket.
8. Remove rubber band and shade from tube.



FIRESTONE MODEL 4-A-71

TRADE NAME	Firestone, Model 4-A-71 (Code 291-8-628)
SUPPLIER	The Firestone Tire & Rubber Co., 1200 Firestone Pkwy., Akron, Ohio.
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna.
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50C5 Power Output, 35W4 Rectifier.
POWER SUPPLY RATING	105-125 Volts AC .23 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	530-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

To set dial pointer, turn tuning cap. fully closed. To set the pointer to the last reference mark at low end of dial, hold dial pointer shank with one hand and turn tuning control shaft with the other hand.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.02 MFD	High side to rear stator of tuning cap. Low side to chassis.	455KC	Point of non-interference	Across voice coil.	A1,A2 A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum mod.
2		Loop	1650KC	Tuning cap. fully open.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		Loop	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

FIRESTONE MODEL 4-A-71

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	Det.-AVC-AF	12AT6	12AT6	7BT	
V4	Power Output.	50C5	50C5		
V5	Rectifier.	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	25E16	AF1010D	UP5515	DY-2X50-150	EL-25	■ Filter.
C1B	50	150						▲ Filter.
C2	.05	200	23E216	P288-05	GT2S5	ST-4-05	TM-15	AVC Filter.
C3	.05	400	23E416	P488-05	GT4S5	ST-4-05	72P1	Line Isolation.
C4	200	500	23E41	1468-0002	5W5T2	MO.5-32	1FM-32	Diode Filter.
C5	.003	600	23E406	P688-003	GT6D3	ST-6-003	TM-23	Tone Compensation.
C6	.005	400	23E208	P688-005	GT6D5	ST-4-005	TM-25	Audio Coupling.
C7A	250		†	1468-00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass.
C7B	10000			P488-01	GT4S1	ST-4-01	TM-11	Audio Coupling.
C8	.02	400	23E413	P488-02	GT4S2	ST-4-02	TM-12	Output Plate Bypass.
C9	.05	400	23E416	P488-05	GT4S5	ST-4-05	TM-15	Line Filter.
C10	.05	400	23E416	P488-05	GT4S5	ST-4-05	TM-15	Phono Isolation.

† Item C7A, C7B, R6, and R7 are combined into one unit obtainable under Mfgrs. part # 23E2023.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	28E41	D13-133	AM-60-Z	Volume Control.
B	Shaft		Not Req.	E	KSS-3	Attach to R1A per instructions.
R2A	500KΩ	½	28E41	D13-133	AM-60-Z	Tone Control.
B	Shaft		Not Req.	E	KSS-3	Attach to R2A per instructions.

RESISTORS

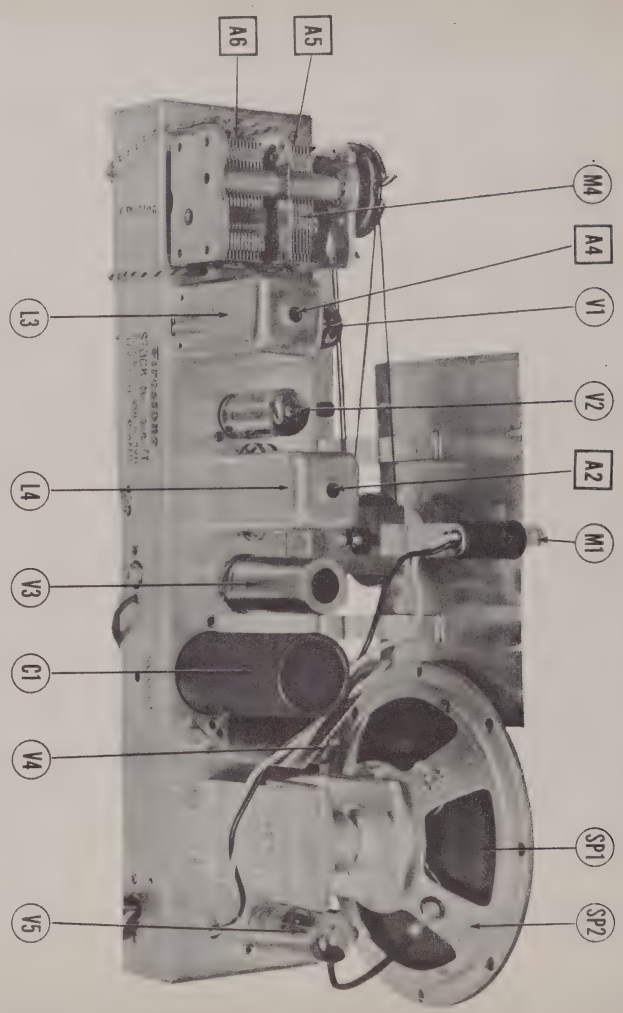
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	IDENTIFICATION CODES	
R3	22KΩ	½	27E223	BTS-22K	Red-Red-Or.	Oscillator Grid.
R4	3.3 Meg.	½	27E335	BTS-3.3 Meg.	Or.-Or.-Grn.	AVC Network.
R5	3.3 Meg.	½	27E335	BTS-3.3 Meg.	Or.-Or.-Grn.	AF Grid.
R6	250KΩ	½	†	BTS-270K		AF Plate Load.
R7	500KΩ	½	†	BTS-470K		Output Grid.
R8	150Ω	½	27E151	BW-½-150	Br.-Grn.- Br.	Output Cathode.
R9	47Ω	½	27E470-2		Yl.-Vi.-Blk.	Surge Limiter.
R10	2300Ω	1	27E222-3	BTA-2200	Red-Red-Red.	Filter.
R11	150Ω	½	27E151		Br.-Grn.-Br.	Rectifier Ballast.

† Items C7, C7B, R6, and R7 are combined into one unit, and are obtainable under Mfgrs. part # 23E2023.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: FIRESTONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
T1	4800Ω	3.5Ω	230Ω	.9Ω	22E8-2	A-3877 ‡	T22S46 ‡	A-2930 ‡	‡ Drill new mounting holes.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: FIRESTONE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V.C. IMP.		ST-105		
SP1	PM	3.5Ω	1E43	Mod. P5-X*	5A15 *	* Drill & tap magnet frame.
	CONE DIA.	V.C. DIA.				
SP2	4 3/4"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: FIRESTONE PART No.	MEISSNER PART No.	
L1	Loop Ant.	.2Ω	2.2Ω	64E21		
2	Osc. Coil.	1Ω	9Ω	20E397	14-1060 §	§ Add 50MMF cap. from high side of tuning cap. to oscillator grid.
3	Input IF	20Ω	20Ω	20E378 or 20E402		
4	Output IF	20Ω	20Ω	20E378 or 20E402		

DIAL LIGHTS

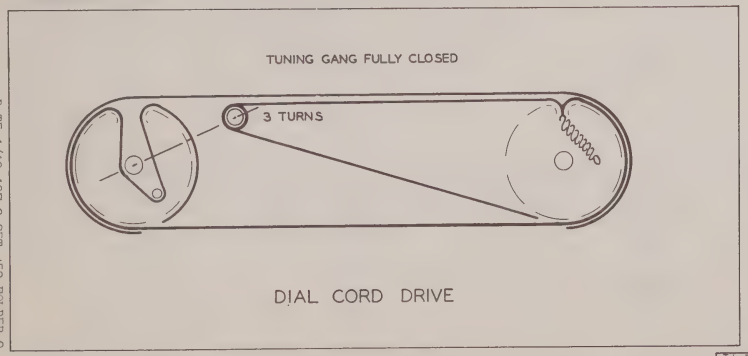
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: FIRESTONE PART No.		NOTES
M1	Bayonet	6-8V	0.15A	Brown	40E1		Type # 47.

PHONO CARTRIDGE

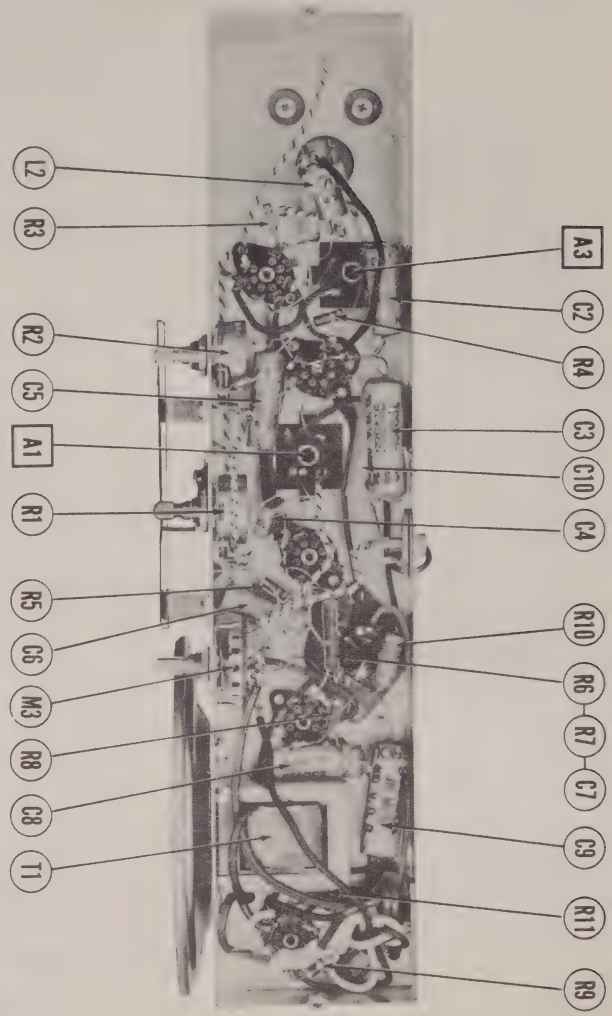
ITEM No.	REPLACEMENT DATA: FIRESTONE PART No.	ASTATIC PART No.	REMARKS
M2		L-70A	

MISCELLANEOUS

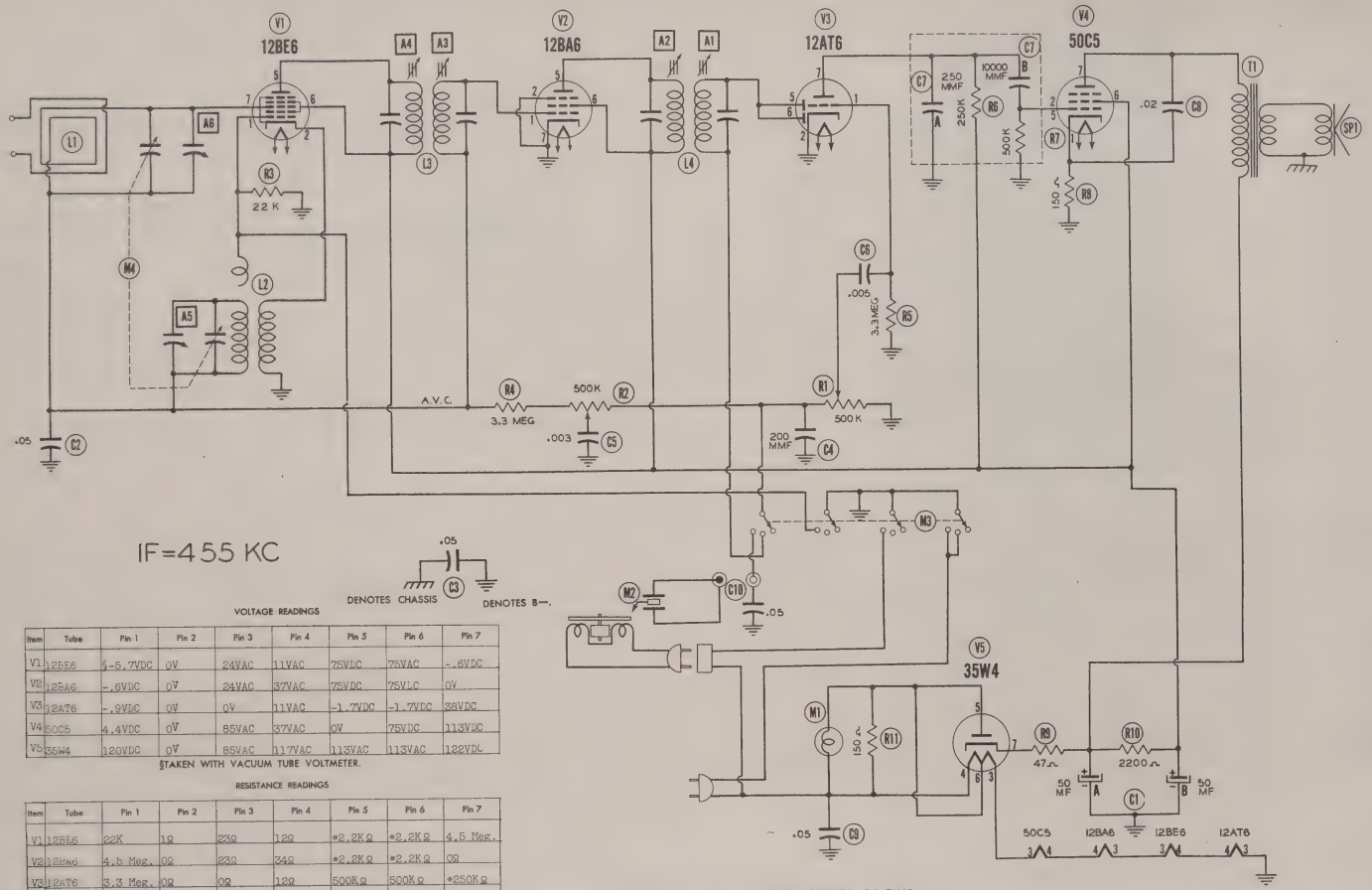
ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M3	Switch	29E23	Radio-Phono-Off.
M4	2 Gang Var. Cap.	24E47	(27-469MMF, 23-150MMF).
	Cabinet	7E1c9	
	Dial Scale	36E43	
	Dial Pointer	35E25	
	Knob	37E21-22	Plain.
	Knob	37E21-23	With Dot.



CHASSIS—BOTTOM VIEW



DATE 4/49 497-9 SET #59 FOLDER 9
FIRESTONE MODEL 4-A-71
FIRESTONE MODEL 4-A-71



IF=455 KC

DENOTES CHASSIS

DENOTES B—.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	-5.7VDC	0V	24VAC	11VAC	75VDC	75VAC	-.6VDC
V2	12BA6	-.6VDC	0V	24VAC	37VAC	75VDC	75VLC	0V
V3	12AT6	-.9VLC	0V	0V	11VAC	-1.7VDC	-1.7VDC	38VDC
V4	50C5	4.4VDC	0V	85VAC	37VAC	0V	75VDC	113VDC
V5	35W4	120VDC	0V	85VAC	117VAC	113VAC	113VAC	128VDC

†TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	1Ω	23Ω	12Ω	*2.2KΩ	*2.2KΩ	4.5 Meg.
V2	12BA6	4.5 Meg.	0Ω	23Ω	34Ω	*2.2KΩ	*2.2KΩ	0Ω
V3	12AT6	3.3 Meg.	0Ω	0Ω	12Ω	500KΩ	500KΩ	*250KΩ
V4	50C5	150Ω	500KΩ	80Ω	34Ω	500KΩ	*2.2KΩ	*270Ω
V5	35W4	62KΩ	Inf.	80Ω	110Ω	105Ω	105Ω	45KΩ

* Measured from pin 7 of V5

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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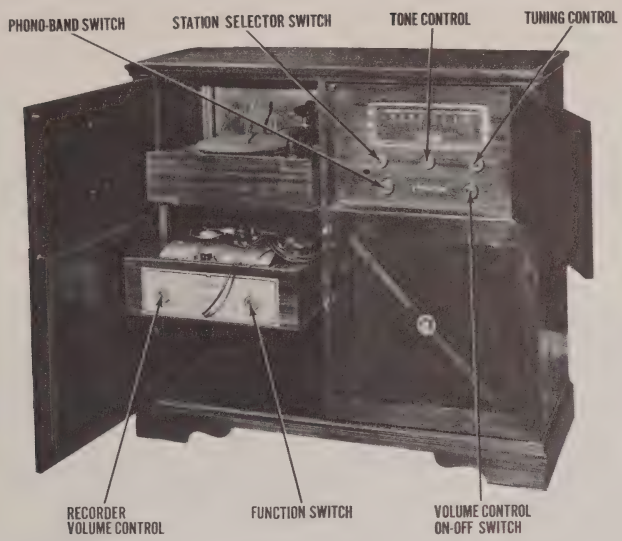
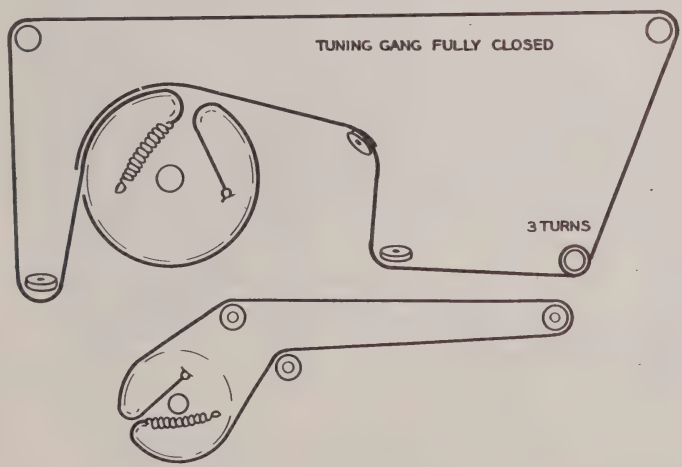
497-9

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



TRADE NAME	Gilfillan, Model 108-48
MANUFACTURER	Gilfillan Bros., Inc., 1815 Venice Blvd., Los Angeles, California.
TYPE SET	AC Operated Combination Phono-Radio-Wire Recorder, AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES(FIFTEEN)	Types 6BA6 RF Amp., 6BE6 Mixer, 6C4 Oscillator, 6SF7 AM IF-DET-AVC, 6BA6 FM 1st IF Amp., 6BA6 FM 2nd IF Amp., 6AL5 Ratio Det., 6J5 Radio Record Pre-Amp., 6C4 AF Amp-Record, 6SC7 AF Amp-Play Back, 6AU6 Mic. Pre-Amp., 6AQ5 Bias Oscillator, 6SK7 AF Amp., 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	1 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620KC
FREQ. MOD.	88-108MC



DIAL CORD DRIVE

GILFILLAN
MODEL 108-48

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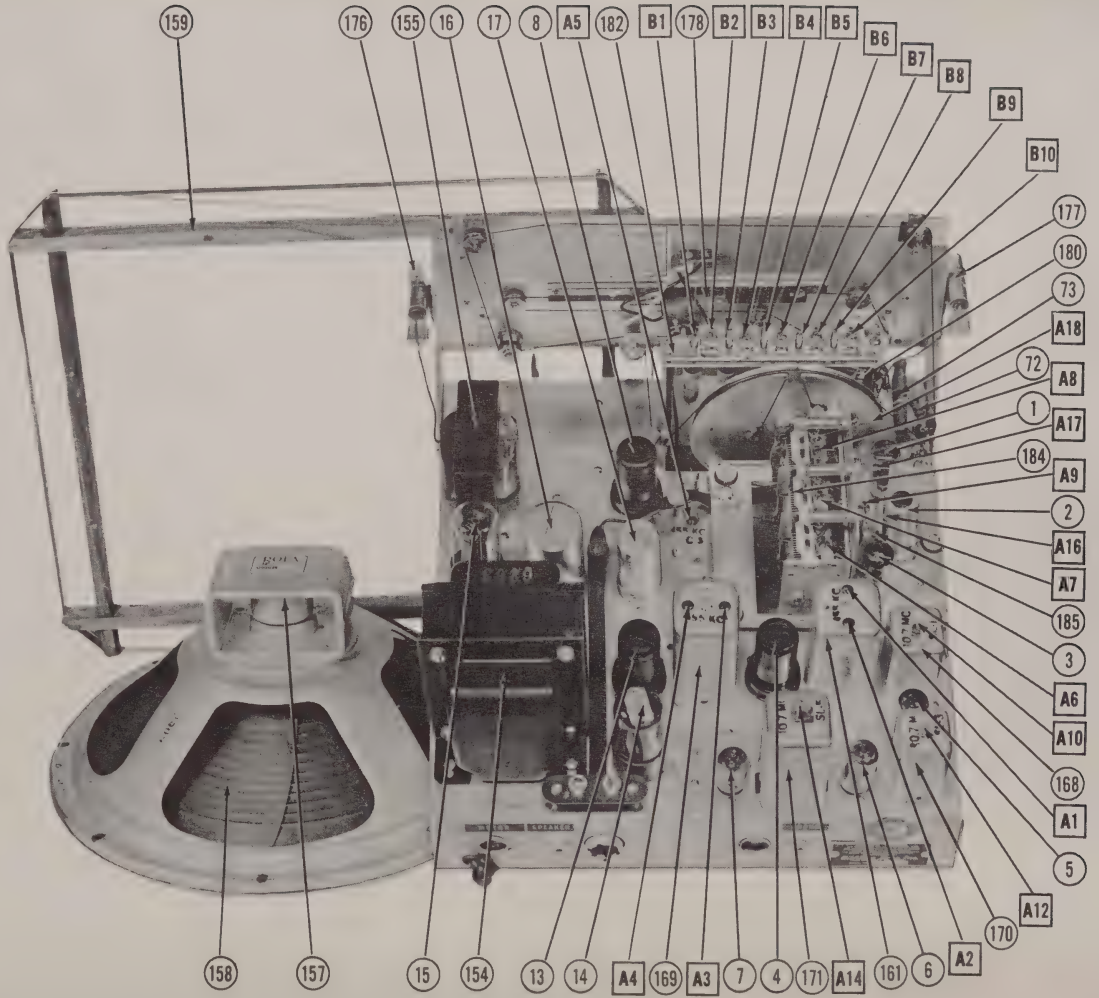
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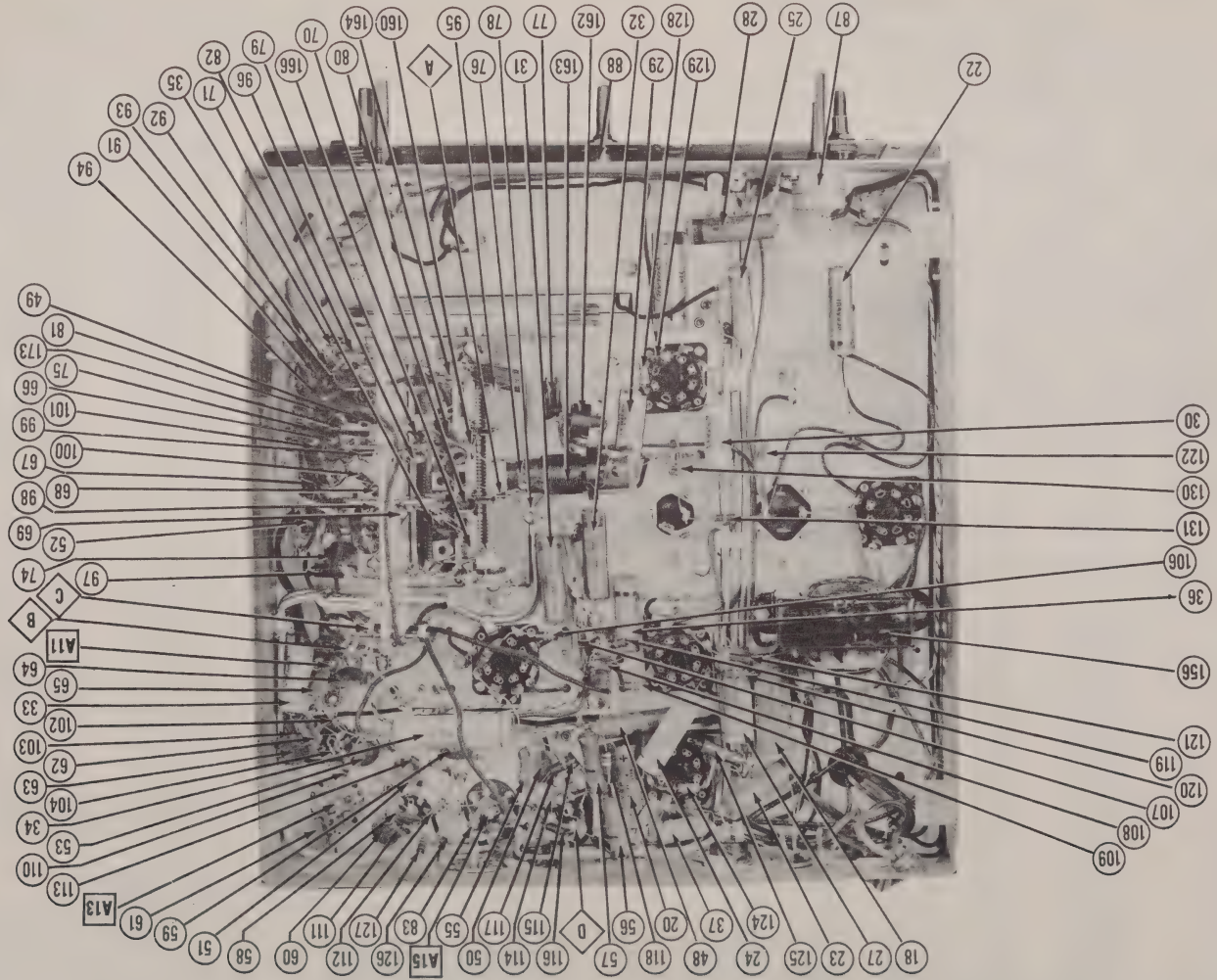
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GILFILLAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.		6BA6	7BK	
2	Mixer.		6BE6	7CH	
3	Oscillator		6C4	6BG	
4	AM IF Det.-AVC		6SF7	7AZ	
5	FM 1st IF Amp.		6BA6	7BK	
6	FM 2nd IF Amp.		6BA6	7BK	
7	Ratio Det.		6AL5	6BT	
8	Radio Record-Pre. Amp.		6J5	6Q	
9	AF Amp.-Record		6C4	6BG	
10	AF Amp.-Play back		6SC7	8S	
11	Mic. Pre-Amp.		6AU6	7BK	
12	Bias Oscillator		6AQ5	7BZ	
13	AF Amp.		6SK7	8N	
14	Power Output		6V6GT	7AC	
15	Rectifier		5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GILFILLAN PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
16A	20	450		AF444J #	UP4245	DY-3X20-450#	EL420#†	▲ Filter.
16B	40	450						▲ "
17A	10	450		AF22J4A †	UP1045C	DY-10-450/25-25	EL2021	■ Pre-Amp. Plate Decoupling.
17B	25	25						▲ Output Cathode Bypass.
18	8	350		PRS 350/8	BR 835	M-8-450	UT-83	AF Plate Decoupling.
19	10	25		PRS 25/10	BR 102A	M-10-25	TA-25	Pre-Amp. Cathode Bypass.
20	10	25		PRS 25/10	BR 102A	M-10-25	TA-25	Stabilizing Cap.
21A	20	450		PRS 450/20	BR 2045	M-20-450	UT-20	◓ Decoupling.
21B	40	150		AF88D4A ‡	UP4415C ‡	DY-305 ‡	EL352 ‡	■ AF Plate Decoup.
21C	40	150						▲ AF Cathode Bypass
21D	20	25						AF " "
22	.05	400		484-05	GT4S5	ST-4-05	TC-15	Line Filtbr.
23	.05	400		484-05	GT4S5	ST-4-05	TC-15	" "
24	.03	600		684-03	GT6S3	ST-6-03	TC-13	Audio Coupling.
25	.006	600		684-006	GT6D6	ST-6-006	TC-26	Tone Compensation.
26	.01	600		684-01	GT6S1	ST-6-01	TC-11	Tone Comp. Note 1.
27	.1	400		484-.1	GT4P1	ST-4-1	TC-1	AF Screen Bypass.
28	.05	200		484-.05	GT2S5	ST-4-05	TC-15	Audio Coupling.
29	.05	200		484-.05	GT2S5	ST-4-05	TC-15	" "
30	.05	200		484-.05	GT2S5	ST-4-05	TC-15	" "
31	.05	400		484-.05	GT4S5	ST-4-05	TC-15	AM-IF Screen Bypass.
32	.05	400		484-.05	GT4S5	ST-4-05	TC-15	AVC Filter.
33	.01	600		684-01	GT6S1	ST-6-01	TC-11	Conv. Plate Decoup.
34	.1	600		684-1	GT6P1	ST-6-1	TC-1	RF Bypass Pwr. Supp.
35	.05	200		484-.05	GT2S5	ST-4-05	TC-15	AVC Filter.
36	.05	400		484-.05	GT4S5	ST-4-05	TC-15	Audio Coupling.
37	.002	600		684-.002	GT6D2	ST-6-002	TC-26	Output Plate Bypass.
38	.05	600		684-.05	GT6S5	ST-6-05	TC-15	RF Filter.
39	.05	600		684-.05	GT6S5	ST-6-05	TC-15	RF Filter. Note 1.
40	.05	400		484-05	GT4S5	ST-4-05	TC-15	Audio Coupling.
41	.01	400		484-.01	GT4S1	ST-4-01	TC-11	Tone Compensation.
42	.05	400		484-.05	GT4S5	ST-4-05	TC-15	Audio Coupling.
43	.02	400		484-.02	GT4S2	ST-4-02	TC-12	" "
44	.1	400		484-.1	GT4P1	ST-4-.1	TC-1	" "
45	.05	400		484-.05	GT4S5	ST-4-05	TC-15	" "
46	.006	600		684-006	GT6D6	ST-6-006	TC-26	" "
47	.01	400		484-01	GT4S1	ST-4-01	TC-11	Tone Compensation.
48	.05	400		484-05	GT4S5	ST-4-05	TC-15	AVC Filter.
49	5000	300		1467-005	1D5D5	MW.5-25	1FM-25	Filament Bypass. Cer.
50	5000	300		1467-005	1D5D5	MW.5-25	1MF-25	" " "
51	5000	300		1467-005	1D5D5	MW.5-25	1FM-25	" " "
52	5000	300		1467-005	1D5D5	MW.5-25	1FM-25	" " "
53	5000	300		1467-005	1D5D5	MW.5-25	1FM-25	" " "

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GILFILLAN PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
96	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Converter Grid.
97	5600Ω	1		BTA-5600	Grn.-Blue-Red. Oscillator Plate Load.
98	47KΩ	½		BTS-47K	Yl.-Vi.-Or. " Grid.
99	10Ω	½			Br.-Blk.-Blk. Parasitic Suppressor.
100	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Mixer Injection Grid.
101	22KΩ	1		BTA-22K	Red-Red-Or. " Screen Dropping.
102	1000Ω	½		BTS-1000	Br.-Blk.-Red. " Plate Decoupling.
103	68Ω	½			Blue-Gray-Blk. 1st FM-IF Cathode.
104	33KΩ	½		BTS-33K	Or.-Or.-Or. " " " Screen.
105	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Bleeder.
106	33KΩ	½		BTS-33K	Or.-Or.-Or. AM IF Screen Dropping.
107	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network.
108	220KΩ	½		BTS-220K	Red-Red-Yl. Diode Load.
109	47KΩ	½		BTS-47K	Yl.-Vi.-Or. " "
110	1000Ω	½		BTS-1000	Br.-Blk.-Red. 1st FM-IF Plate Decoupling.
111	68Ω	½			Blue-Gray-Blk. 2nd " " Cathode.
112	33KΩ	½		BTS-33K	Or.-Or.-Or. " " " Screen Dropping.
113	1000Ω	½		BTS-1000	Br.-Blk.-Red. " " " Decoupling.
114	220Ω	½			Red-Red-Br. Balancing Resistor.
115	47KΩ	½		BTS-47K	Yl.-Vi.-Or. De-emphasis.
116	6800Ω	½		BTS-6800	Blue-Gray-Red. Ratio Detector Diode Load.
117	6800Ω	½		BTS-6800	Blue-Gray-Red. " " " "
118	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AVC Network.
119	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue. AF Grid. See Note 3.
120	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. " Plate Load.
121	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. " Screen Dropping.
122	22KΩ	½		BTS-22K	Red-Red-Or. " Decoupling.
123	82KΩ	½		BTS-82K	Gray-Red-Or. Tone Compensation. See note 1.
124	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid.
125	220Ω	1		BW-1-220	Red-Red-Br. " Cathode.
126	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Series Phono.
127	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Phono Shunt.
128	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AF Grid.
129	1000Ω	½		BTS-1000	Br.-Blk.-Red. AF Cathode.
130	47KΩ	½		BTS-47K	Yl.-Vi.-Or. " Plate Load.
131	22KΩ	½		BTS-22K	Red-Red-Or. AF Plate Decoupling.
132	330KΩ	½		BTS-330K	Or.-Or.-Yl. " Grid.
133	1800Ω	½		BTS-1800	Br.-Gray-Red. " Cathode.
134	39KΩ	½		BTS-39K	Or.-White-Or. " Plate Load.
135	220KΩ	½		BTS-220K	Red-Red-Yl. Indicator Coupling.
136	820KΩ	½		BTS-820K	Gray-Red-Yl. Audio Coupling.
137	68KΩ	½		BTS-68K	Blue-Gray-Or. " "
138	12KΩ	½		BTS-12K	Br.-Red-Or. AF Grid.
139	270KΩ	½		BTS-270K	Red-Vi.-Yl. AF Plate Load.
140	120KΩ	½		BTS-120K	Br.-Red-Yl. AF Plate Load.
141	680KΩ	½		BTS-680K	Blue-Gray-Yl. Tone Compensation.
142	120KΩ	½		BTS-120K	Br.-Red-Yl. " "
143	180KΩ	1		BTA-180K	Br.-Gray-Yl. AF Plate Decoupling.
144	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Tone Compensation. See Note 2.
145	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AF Grid.
146	27KΩ	½		BTS-27K	Red-Vi.-Or. Bleeder.
147	220KΩ	½		BTS-220K	Red-Red-Yl. Mic. Amp. Screen Dropping.
148	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. " " Plate Load.
149	1800Ω	½		BTS-1800	Br.-Gray-Red. " " Cathode.
150	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. " " Grid.
151	820Ω	1		BTA-820	Gray-Red-Br. Decoupling.
152	820KΩ	½		BTS-820K	Gray-Red-Yl. Tone Compensation. See Note 2.
153	120KΩ	½		BTS-120K	Br.-Red-Yl. Tone Compensation. See Note 2.

Note 3: Some models use 4.7 Meg. in this application. IRC replacement BTS-4.7 Meg.
Note 1: Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: GILFILLAN PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.
154	117 VAC @ 1.0A	640 VCT .146ADC	5.4 VAC @ 2.0A	6.8 VAC @ 4.35A		P-6014 ‡‡ *	T22R33 § ††	

§ Drill new mounting holes.
††Add series Resistor to reduce plate voltage.
* Mount vertically with universal mounting bracket.

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA GILFILLAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
54	5000	300		1467-005	1D5D5	MW.5-25	1FM-25	Filament Bypass. Cer.
55	1000	300		1467-001	1W5D1	MW.5-21	1FM-21	De-emphasis. Cer.
56	100	300		1469-0001	5R5T1	MOS.5-31	MS-31	Diode Load Cap. " Note 2.
57	100	300		1469-0001	5R5T1	MOS.5-31	MS-31	Diode Load Cap. " Note 2.
58	5000	300		1467-.005	1D5D5	MW.5-25	1FM-25	2nd IF Screen Bypass Cer.
59	5000	300		1467-.005	1D5D5	MW.5-25	1FM-25	" " Decoup. "
60	5000	300		1467-.005	1D5D5	MW.5-25	1FM-25	" " Cathode By-pass. Cer.
61	5000	300		1467-.005	1D5D5	MW.5-25	1FM-25	1st IF Plate Decoup-ling. Cer.
62	5000	300		1467-.005	1D5D5	MW.5-25	1FM-25	1st IF Screen Bypass
63	5000	300		1467-.005	1D5D5	MW.5-25	1FM-25	1st IF Cathode Bypass Cer.
64	5000	300		1467-.005	1D5D5	MW.5-25	1FM-25	AVC Filter. Cer.
65	5000	300		1467-.005	1D5D5	MW.5-25	1FM-25	Conv. Plate Decoup. Cer.
66	5000	300		1467-.005	1D5D5	MW.5-25	1FM-25	" Screen Bypass. "
67	30	300		1468-000025	5W5Q3	MO.5-43	MS-43	" Plate Bypass. Cer.
68	5	300		1468-.000005	5W5V5	MO.5-55	MS-55	Osc. Coupling. Cer.
69	50	300		1468-00005	5W5Q5	MO.5-45	1FM-45	" Grid Cap. Cer
70	25	300		1469-.000025	5R5Q25	MOS.5-425	MS-425	Fixed Trimmer. Cer.
71	100	300		1469-0001	5R5T1	MOS.5-31	MS-31	" Pad. Cer.
72	70	300		1469-.00007	5R5Q7	MOS.5-47	MS-47	" Trimmer. Cer.
73	400	300		1469-.0004	5R5T4	MOS.5-34	MS-34	" "
74	5000	300		1467-005	1D5D5	MW.5-25	1FM-25	Osc. Plate Bypass. Cer.
75	5000	300		1467-005	1D5D5	MW.5-25	1FM-25	RF Bypass Pwr. Supp. Cer.
76	15	300					MS-415	Fixed Trimmer Cer.
77	50	500		1469-.00005		MOS.5-45	MS-45	" "
78	5	300		1468-.000005	5W5V5	MO.5-55	MS-55	RF Coupling. Cer.
79	15	300			5W5Q2		MS-415	RF Coupling. Cer.
80	100	300		1468-0001	5W5T1	MO.5-31	1FM-31	" " "
81	5000	300		1467-005	1D5D5	MW.5-25	1FM-25	" Screen Bypass.Cer.
82	100	300		1468-0001	5W5T1	MO.5-31	1FM-31	" Coupling. "
83	30	300			5R5Q3	MOS.5-43	MS-43	Fixed Trimmer. Cer. Note 1.
84	1000	300		1467-.001	1W5D1	MW.5-21	1FM-21	Audio Coupling. "
85	250	500		1468-00025	5W5T25	MO.5-325	1FM-325	Tone Compensation.
86	500	500		1468-0005	5W5T5	MO.5-35	1FM-35	Level Ind. Bypass.
185	10	300		1469-00001	5R5Q1	MOS.5-41	MS-41	Fixed Pad. Cer. Note 1.

Parallel sections to obtain desired capacity.
† Omit one section.
‡ Install new mounting clamp.
Note 1. Not used in all models.
Note 2. When either items #56 or 57 are replaced, replace both with capacitors of equal value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA GILFILLAN PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
87A	2 Meg.	½		D13-139	M-66-Z	Volume Control.
87B	Shaft			A	Not req.	Attach to 87A per instructions.
87C	Switch			41	SW-A	" " "
88A	500K	½		D13-133	M-60-Z	Tone Control.
88B	Shaft			A	Not req.	Attach to 88A per instructions.
89A	1 Meg.	½		D13-137	M-63-Z	Recording Volume mixer.
89B	Shaft			A	Not req.	Attach to 89A per instructions.
90A	1 Meg.	½		D13-137	M-63-Z	Neon level Control.
90B	Shaft			A	Not req.	Attach to 90A per instructions.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA GILFILLAN PART No.	IRC PART No.	IDENTIFICATION CODES	
91	470KΩ	½		BTS-470K	Yl.-Vl.-Yl.	RF Grid.
92	68Ω	½			Blue-Gray-Blk.	RF Cathode.
93	56KΩ	½		BTS-56K	Grn.-Blue-Or.	Bleeder.
94	22KΩ	1		BTA-22K	Red-Red-or.	RF Screen Dropping.
95	4700Ω	½		BTS-4700	Yl.-Vl.-Red.	RF Plate Load.

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA GILFILLAN PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	INSTALLATION NOTES
155	.146A	170Ω	10HY.		C-1710‡‡	T20C54§	C-3195§	‡‡ Drill one new mounting hole. § Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA GILFILLAN PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
156	5000Ω	4.1Ω	330Ω	.4Ω		A-3824	T22S58	A-29C2‡‡	‡‡ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA GILFILLAN PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V.C. IMP.		ST-101 **		
157	PM	4.1Ω		MOD. P12-T	12A4 **	** Replace output transformer to match 6-8Ω voice coil.
	CONE DIA.	V.C. DIA.				
158	11 3/8"	1"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA GILFILLAN PART No.	MEISSNER PART No.	
159	Loop Ant.		1.3Ω			
160	Dipole Ant.-FM		0Ω			
161	Ant.Coil-FM		0Ω			
162	Wave Trap		64Ω			
163	RF Coil-AM	59Ω	2.5Ω		14-1057	
164	RF Coil-FM		0Ω			
165	Osc.Coil-AM		8.5Ω		14-1060	
166	Osc.Coil-FM		0Ω			
167	1st IF-AM	21Ω	21.5Ω			
168	1st IF-FM	.5Ω	0Ω			
169	2nd IF-AM	21.5Ω				
170	2nd IF-FM	1.5Ω	0Ω			
171	FM Det. Trans.	0Ω	0Ω			
172	Erase Osc. Coil.	0Ω	5.5Ω			
173	FM Plate chk		.3Ω			Wound on 27K Resistor.
174	Fil. Choke		1.1Ω			
175	RF Plate chk		71Ω			

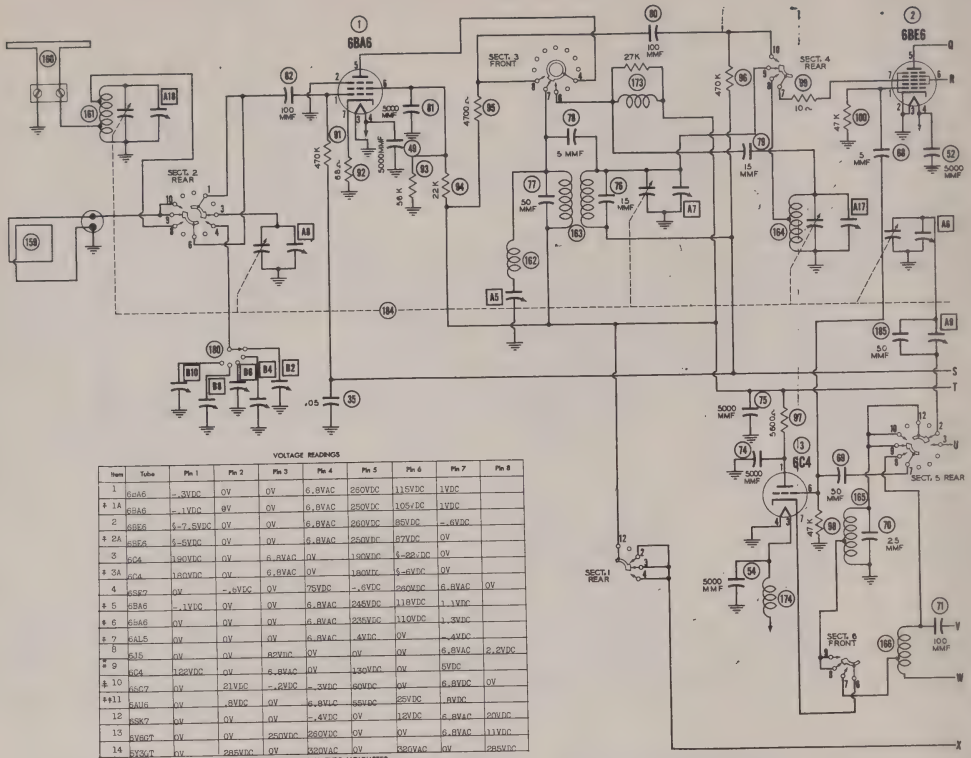
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA GILFILLAN PART No.		NOTES
176	Bayonet	6-8V	0.15A	Brown			Type #47
177	"	6-8V	0.15A	"			" 47
178	"	6-8V	0.15A	"			47

MISCELLANEOUS

ITEM No.	PART NAME	GILFILLAN PART No.	NOTES
179	Switch		Band
180	"		Push Button.
181	"		Function (Recorder)
182	Coil Assembly		Station Selector
183	Lamp		Neon (NE-51)
184	3 Gang Var.Cap.		AM(20-520 MMF, 23-499 MMF, 23-514 MMF)

DATE 4/49 497-10 SET #59 FOLDER 10



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-.3VDC	0V	0V	6.8VAC	280VDC	115VDC	1VDC	
‡ 1A	6BA6	-.1VDC	0V	0V	6.8VAC	250VDC	105VDC	1VDC	
2	6BE6	§-7.5VDC	0V	0V	6.8VAC	260VDC	85VDC	-.6VDC	
‡ 2A	6BE6	§-5VDC	0V	0V	6.8VAC	250VDC	87VDC	0V	
3	6C4	190VDC	0V	6.8VAC	0V	190VDC	§-22VDC	0V	
‡ 3A	6C4	180VDC	0V	6.8VAC	0V	180VDC	§-6VDC	0V	
4	6SR7	0V	-.6VDC	0V	75VDC	-.6VDC	260VDC	6.8VAC	0V
‡ 5	6BA6	-.1VDC	0V	0V	6.8VAC	245VDC	118VDC	1.1VDC	
‡ 6	6BA6	0V	0V	0V	6.8VAC	235VDC	110VDC	1.3VDC	
‡ 7	6AL5	0V	0V	0V	6.8VAC	4VDC	0V	-.4VDC	
8	6J5	0V	0V	82VDC	0V	0V	0V	6.8VAC	2.2VDC
* 9	6C4	128VDC	0V	6.8VAC	0V	130VDC	0V	6VDC	
‡ 10	6SC7	0V	81VDC	-.2VDC	-.3VDC	60VDC	0V	6.8VDC	0V
‡‡11	6AU6	0V	.8VDC	0V	6.8VDC	55VDC	25VDC	.8VDC	
12	6SK7	0V	0V	0V	-.4VDC	0V	12VDC	6.8VAC	20VDC
13	5V6GT	0V	0V	0V	250VDC	260VDC	0V	0V	6.8VAC	11VDC
14	5Y3GT	0V	285VDC	0V	320VAC	0V	320VAC	0V	285VDC

‡TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	3 Meg.	0Ω	0Ω	.1Ω	40KΩ	40KΩ	68Ω	
‡ 1A	6BA6	1 Meg.	0Ω	0Ω	.1Ω	50KΩ	50KΩ	68Ω	
2	6BE6	47KΩ	0Ω	0Ω	.1Ω	40KΩ	45KΩ	2 Meg.	
‡ 2A	6BE6	47KΩ	0Ω	0Ω	.1Ω	50KΩ	75KΩ	10Ω	
3	6C4	46KΩ	Inf.	.1Ω	0Ω	46KΩ	47KΩ	1.5Ω	
‡ 3A	6C4	56KΩ	Inf.	.1Ω	0Ω	56KΩ	47KΩ	0Ω	
4	6SR7	0Ω	2 Meg.	0Ω	40KΩ	310KΩ	35KΩ	.1Ω	0Ω
‡ 5	6BA6	500KΩ	0Ω	0Ω	.1Ω	50KΩ	85KΩ	68Ω	
‡ 6	6BA6	1.5Ω	0Ω	0Ω	.1Ω	50KΩ	85KΩ	68Ω	
‡ 7	6AL5	Inf.	Inf.	0Ω	.1Ω	7KΩ	0Ω	7KΩ	
8	6J5	0Ω	0Ω	110KΩ	Inf.	500KΩ	0Ω	.1Ω	100Ω
* 9	6C4	80KΩ	Inf.	.1Ω	0Ω	80KΩ	270KΩ	1900Ω	
‡ 10	6SC7	0Ω	500KΩ	10KΩ	2.2 Meg.	340KΩ	0Ω	.1Ω	0Ω
‡‡ 11	6AU6	0Ω	1800Ω	0Ω	.1Ω	600KΩ	30KΩ	1800Ω	
12	6SK7	0Ω	0Ω	0Ω	10 Meg.	0Ω	2.2 Meg.	.1Ω	600KΩ
13	5V6GT	0Ω	0Ω	40KΩ	40KΩ	470KΩ	Inf.	.1Ω	220Ω
14	5Y3GT	Inf.	40KΩ	Inf.	75Ω	Inf.	80Ω	Inf.	40KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.
‡‡ Taken with recorder function switch in radio mic record position.
‡ Taken with recorder function switch in radio playback position.
* Taken with recorder function switch in radio record position.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

BAND PHONO SWITCH SHOWN IN BC POSITION.
SWITCH SEQUENCE FROM MAXIMUM COUNTER CLOCKWISE:
1. STATION SELECTOR
2. BROADCAST (BC)
3. FREQ. MOD.
4. PHONO

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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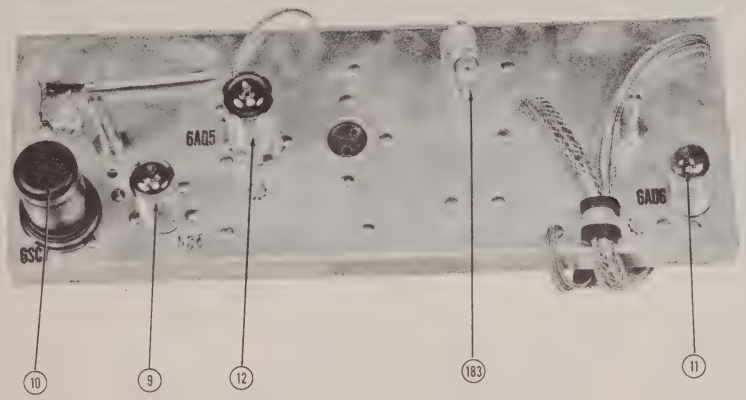
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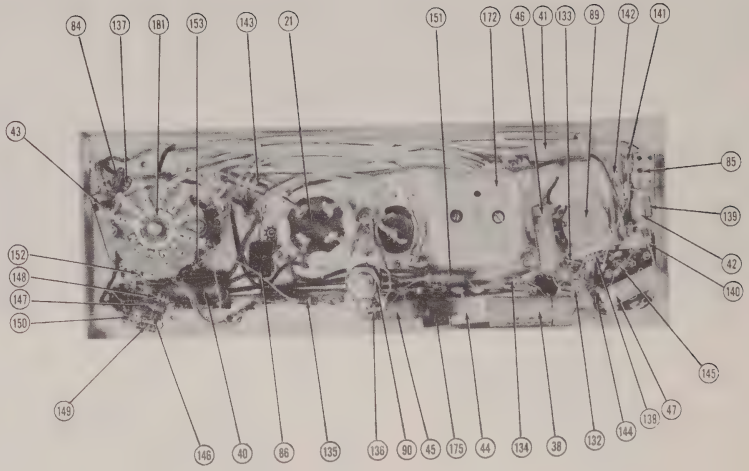
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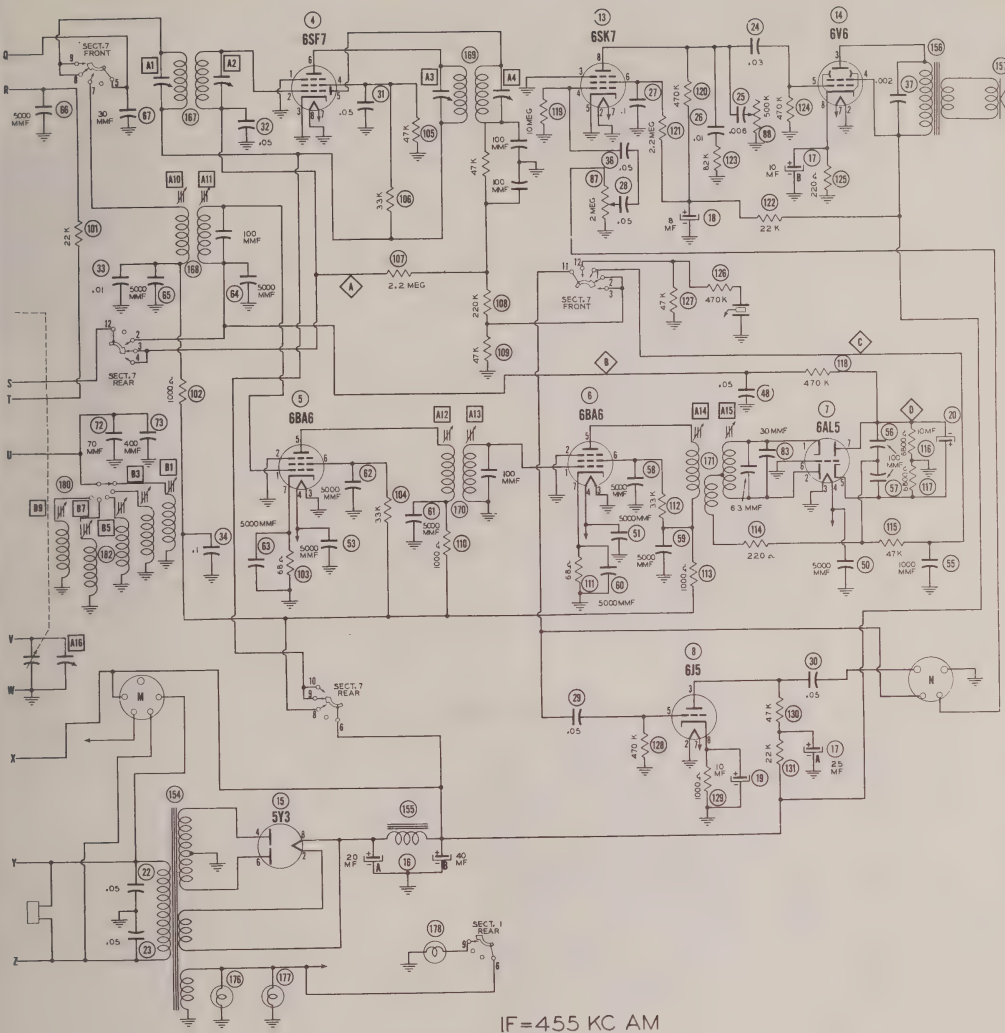

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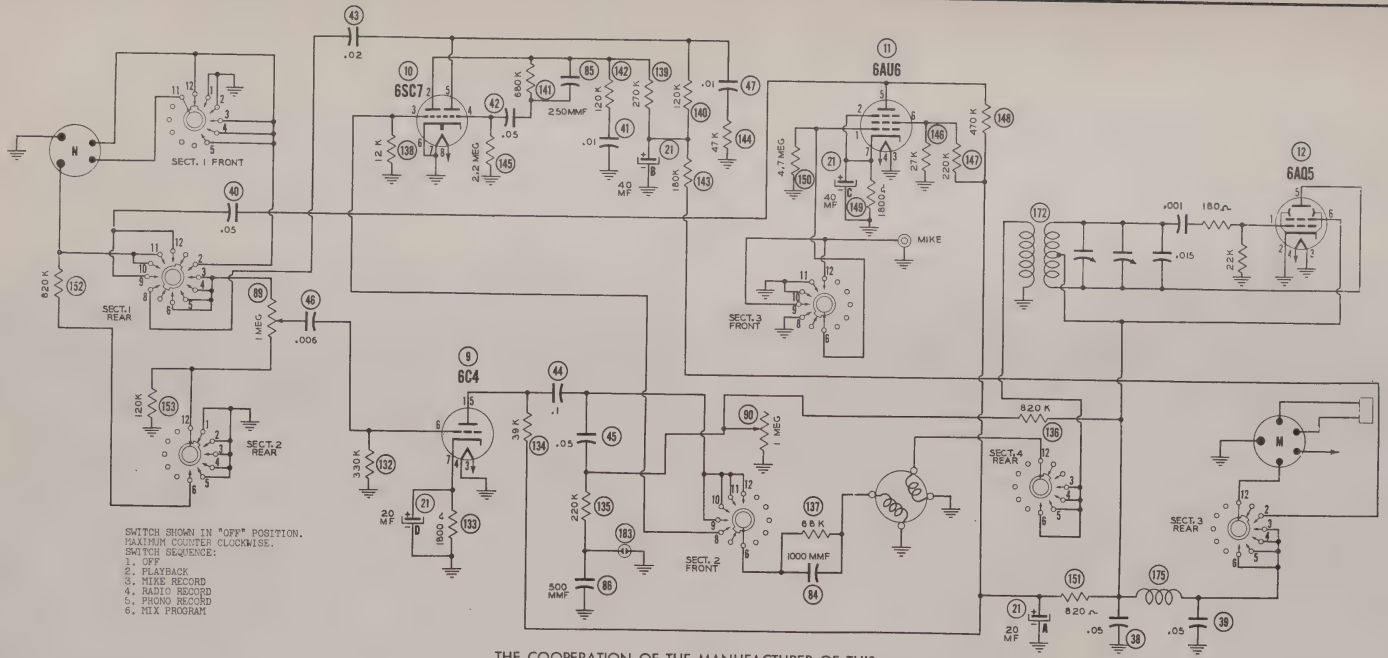

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning cap. fully open and set pointer to small triangle at left edge of dial.

Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1	.1 MFD	High side to ungrounded side of AM loop socket. Low side to chassis.	455KC	AM (1 position from fully clockwise).	Tuning cap. fully open.	D.C.Probe to point A. Common to chassis.	A1,A2 A3,A4	Adjust for maximum deflection.
2	.1 MFD	"	455KC	"	"	"	A5	Adjust for minimum deflection.
3		Loop	1500KC	"	1500KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust A6 for maximum deflection.
4		"	1500KC	"	Tune for maximum deflection.	"	A7,A8	Adjust for maximum deflection.
5		"	600KC	"	"	"	A9	Rock tuning cap. and adjust A9 for maximum deflection. Repeat steps 3,4,& 5 until no further improvement can be made.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6	.01 MFD	High side to pin 7(Grid) of 6BE6. Low side to chassis.	10.7 MC (Unmod.)	FM (2 positions from fully clockwise).	Tuning cap. fully open.	D.C.Probe to point B. Common to chassis	A10, A11 A12 A13 A14	Remove 6C4 tube from its socket. Adjust A10 thru A14 for maximum deflection. Attenuate output of signal generator to maintain VTVM reading of about 1.5 Volts.
7	.01 MFD	"	10.7 MC (Unmod.)	"	"	D.C.Probe to point C. Common to chassis.	A15	Adjust for zero deflection. Replace 6C4 tube in its socket. Continue with FM-RF alignment in step 9.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

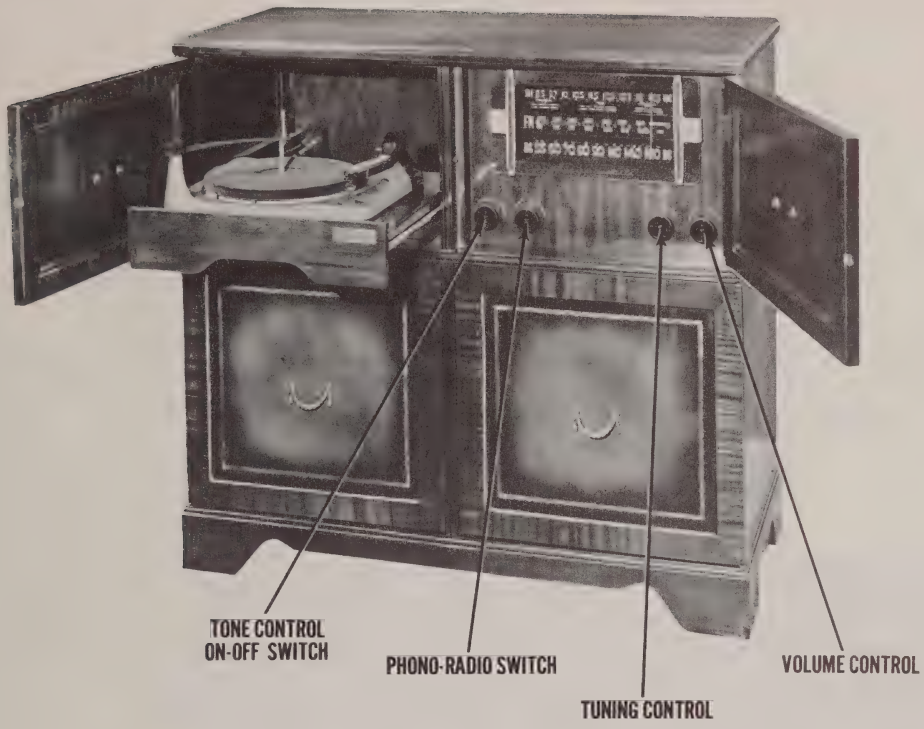
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6	.01 MFD	High side to pin 1(Grid) of 6BA6 1st FM IF tube (5). Low side to chassis.	10.7 MC (Freq.Mod.)	FM	Tuning cap. fully open.	Vertical input to point D. Ground to chassis.	A12. A13 A14	Disconnect 10 MFD cap. (20) from point D. Adjust A12,A13,A14 for maximum amplitude, symmetry and coincidence of pattern per fig. 1.
7	.01 MFD	High side to pin 7(Grid) of 6BE6. Low side to chassis.	"	"	"	"	A10, A11	Adjust for maximum amplitude, symmetry and coincidence of pattern per fig. 1. Reconnect cap. (20) to point D.
8	.01 MFD	"	10.7 MC (Freq.Mod.)	"	"	Vertical input to point C. Ground to chassis.	A15	Adjust for crossover of diagonal lines occurring at scope horizontal sweep line per fig.2. Continue with FM-RF alignment in step 9.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9	270Ω carbon resistor	High side to ungrounded FM ant. terminal. Low side to chassis.	108 MC (Unmod.)	FM	108 MC	D.C.Probe to point B. Common to chassis.	A16	Adjust for maximum deflection.
10	"	"	108 MC (Unmod.)	"	Tune for maximum deflection.	"	A17 A18	Rock tuning cap. and adjust for maximum deflection.

FIG.1

FIG. 2



MAJESTIC
MODEL 12FM895

TRADE NAME	Majestic, Model 12FM895 (Ch. 12C22E)
MANUFACTURER	Majestic Radio and Television Corp, Elgin, Illinois
TYPE SET	AC Operated Combination Phono-Radio, 2 Band AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES (TWELVE)	Types 6BA6 FM RF Amp., 6SG7 AM RF Amp., 6BE6 FM Converter, 6SA7 AM Converter, 6SG7 1st IF Amp., 6SG7 FM 2nd IF Amp.. 6SH7 FM Limiter, 6S8GT DET-AVC-AF, 6SJ7 Phase Inverter (2) 6V6GT Power Output, 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC RATING 1.02 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1650 KC SHORT WAVE 9.5-15.5 MC FREQ. MOD. 88-108.5MC

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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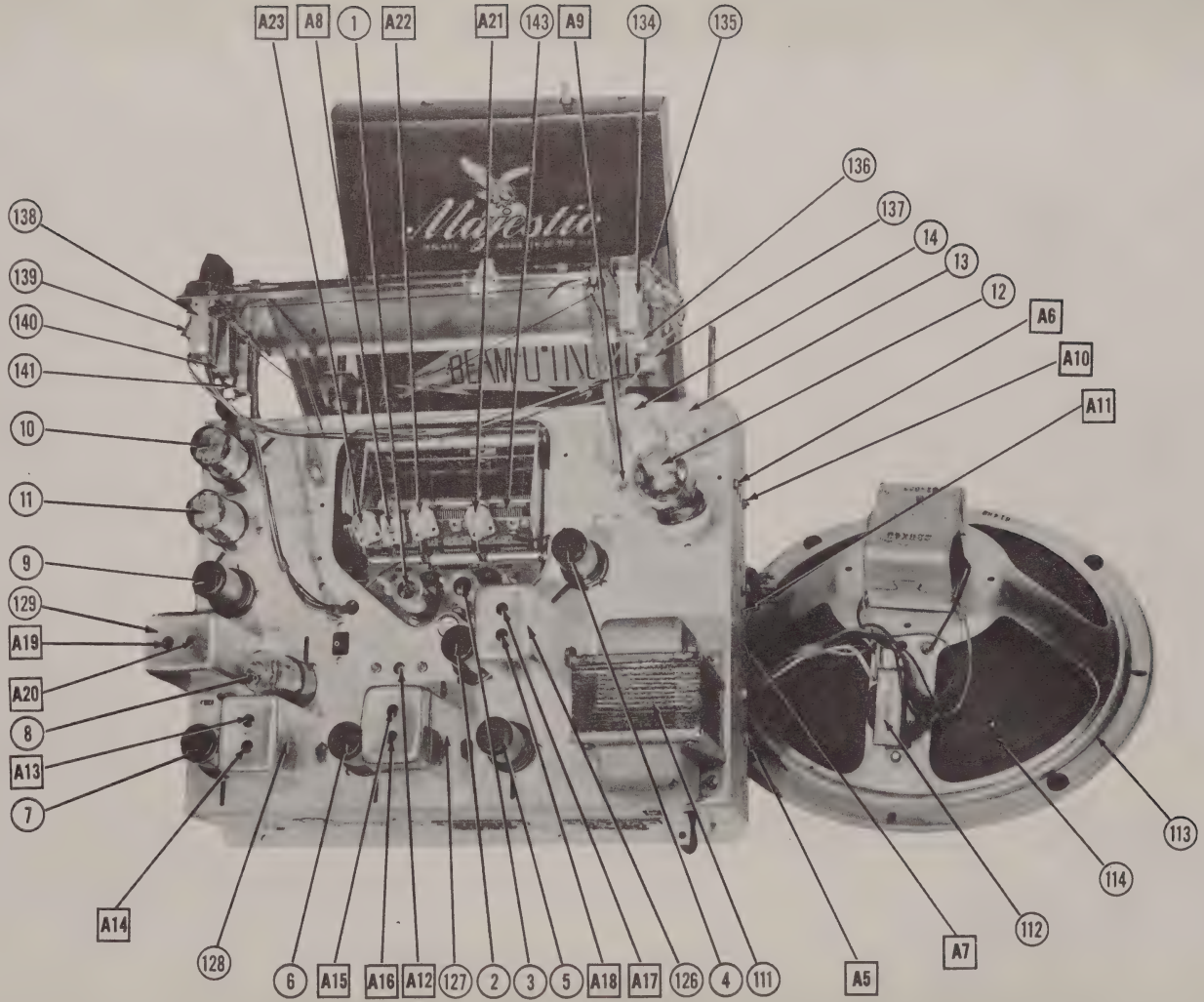
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MAJESTIC
MODEL 12FM895 PAGE 3

PARTS LIST AND DESCRIPTIONS
TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	6BA6	6BA6	7BK	
2	AM RF Amp.	6SG7	6SG7	8BK	
3	FM Converter.	6BE6	6BE6	7CH	
4	AM Converter	6SA7	6SA7	8R	
5	1st IF Amp.	6SG7	6SG7	8BK	
6	FM 2nd IF Amp.	6SG7	6SG7	8BK	
7	FM Limiter.	6SH7	6SH7	8BK	
8	Det.-AVC-AF	6S8GT	6S8GT	8CB	
9	Phase Inverter	6SJ7	6SJ7	8N	
10	Power Output	6V6GT	6V6GT	7AC	
11	Power Output	6V6GT	6V6GT	7AC	
12	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAJESTIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
13A	10	450	19-34	AF22J	UP1145	DY-2X10-450	EL-210	Filter. ■
13B	10	450						" ▲
14	30	450	19-35	AF6J	UP3045	DY-30-450	EL-3	Filter.
15	.001	1000	5-84	1084-001	GT16D1	STM-16-001	TR-21	Output Plate Bypass.
16	.05	600	017-8	684-05	GT6S5	ST-6-05	TC-15	Audio Coupling.
17	.05	600	017-8	684-05	GT6S5	ST-6-05	TC-15	" "
18	.01	600	017-5	684-01	GT6S1	ST-6-01	TC-11	" "
19	.02	400	016-6	484-02	GT4S2	ST-4-02	TC-12	" "
20	.006	600	5-69	684-006	GT6D6	ST-6-006	TC-26	Tone Compensation.
21	.01	400	017-5	484-01	GT4S1	ST-4-01	TC-11	" "
22	.01	600	017-5	684-01	GT6S1	ST-6-01	TC-11	3rd IF Plate Decoup.
23	.01	600	017-5	684-01	GT6S1	ST-6-01	TC-11	Decoupling.
24	.01	600	017-5	684-01	GT6S1	ST-6-01	TC-11	2nd IF Plate Decoup.
25	.01	400	017-5	484-01	GT4S1	ST-4-01	TC-11	" " Cath. Bypass.
26	.01	600	017-5	684-01	GT6S1	ST-6-01	TC-11	1st IF Plate Decoup.
27	.02	400	016-6	484-02	GT4S2	ST-4-02	TC-12	AVC Filter.
28	.05	600	016-8	684-05	GT6S5	ST-6-05	TC-15	" "
29	.01	600	017-5	684-01	GT6S1	ST-6-01	TC-11	AM Conv. Plate Decoup.
30	.01	600	017-5	684-01	GT6S1	ST-6-01	TC-11	" " Screen Bypass.
31	.01	600	017-5	684-01	GT6S1	ST-6-01	TC-11	FM Conv. Plate Decoup.
32	.01	600	017-5	684-01	GT6S1	ST-6-01	TC-11	RF Plate Decoupling.
33	.01	600	017-5	684-01	GT6S1	ST-6-01	TC-11	RF Screen Bypass.
34	.01	600	017-5	684-01	GT6S1	ST-6-01	TC-11	Tuning Cap. Isolation.
35	.01	400	017-5	484-01	GT4S1	ST-4-01	TC-11	" " " "
36	.05	400	016-8	484-05	GT4S5	ST-4-05	TC-15	AVC Filter.
37	234	300	020-53	1468-0002	5W5T2	MO.5-32	1FM-32	1st AF Plate Bypass. Cer.
38	100	500	020-39	1468-0001	5W5T1	MO.5-31	1FM-31	RF Bypass.
39	1200	500	021-20	1467-001	1W5D1	MW.5-21	1FM-21	De-emphasis.
40	2000	300	6-231	1467-002	1W5D2	MW.5-22	1FM-22	3rd IF Screen Bypass Cer
41	2000	300	6-231	1467-002	1W5D2	MW.5-22	1FM-22	2nd IF Screen Bypass Cer.
42	234	300	020-53	1468-0002	5W5T2	MO.5-32	1FM-32	Diode Filter. Cer.
43	234	300	020-53	1468-0002	5W5T2	MO.5-32	1FM-32	" " "
44	2000	300	6-231	1467-002	1W5D2	MW.5-22	1FM-22	1st IF Screen Bypass Cer.
45	47	300	6-159	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap. Cer.
46	220	300	6-207	1468-0002	5W5T2	MO.5-32	1FM-32	" " " "
47	234	300	*	1468-0002	5W5T2	MO.5-32	1FM-32	RF Coupling. Cer.
48	234	300	*	1468-0002	5W5T2	MO.5-32	1FM-32	" " "
49	234	300	6-208					Fixed Padder. Cer.
50	100	300		1467-0001	5W5T1	MO.5-31	1FM-31	Fixed Trimmer. "
51	5	300		1468-000005	5W5V5	MO.5-55	MS-55	RF Coupling. "
52	234	300	6-208					Fixed Padder. "
53	1000	300	6-230	1468-001	1W5D1	MW.5-21	1FM-21	FM Conv. Screen By-pass. Cer.
54	1000	500	021-15	1468-001	1W5D1	MW.5-21	1FM-21	Fixed Padder.
55	15	300	6-199	1468-00001	5W5Q2	MO5.5-42	MS-415	Osc. Grid Cap. Cer.
56	24	300	6-143	1468-000025	5W5Q25	MO.5-425	MS-425	RF Coupling. "
57	1000	300	6-230	1468-001	1W5D1	MW.5-21	1FM-21	RF Plate Decoup."
58	1000	300	6-230	1468-001	1W5D1	MW.5-21	1FM-21	" Screen Bypass.Cer.
59	1000	300	6-230	1468-001	1W5D1	MW.5-21	1FM-21	" Cath. Bypass.Cer.

PARTS LIST AND DESCRIPTIONS (Continued)
TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No
111	117 VAC @ 1.02A	650 VCT 135 ADC	5.2 VAC @ 3.0A	6.6 VAC @ 4.45A	2-19	P-4080 #	T22R32 #	P-3153 #

Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
112	8000Ω CT	4.0Ω	510Ω CT	.8Ω	52-43	A-3823	T22S87	A-2936	

SPEAKER

ITEM No.	RATINGS	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD RES. V.C.IMP.				
113	390Ω 4.0Ω	22-43			
	CONE DIA. V.C. DIA.				
114	11 3/4" 1 1/8"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: MEISSNER PART No.	
115	AM Loop Ant.		.5Ω	20-27		
116	Loop Load-ing Coil.		1.5Ω	Part of 20-27		
117	SW. Ant.		0Ω			
118	SW.Ant.Coil.	.8Ω	.2Ω	3-185		
119	FM Dipole. Ant.			S-1610		
120	FM Ant.Coil.		0Ω	3-183		
121	Wave Trap. Coil.		19Ω	S-1468		
122A	AM RF Coil.	49Ω	3Ω	3-186		
122B	SW RF Coil.	.6Ω	0Ω			
123	FM RF Coil.		0Ω	3-184		
124A	AM Osc.Coil.		4Ω	3-171		
124B	SW Osc.Coil.		0Ω			
125	FM Osc.Coil.		0Ω	3-189		
126A	AM 1st IF	13Ω	5.5Ω †	3-173		† Includes FM-IF Sec. Winding.
126B	FM 1st IF	.2Ω				
127A	AM 2nd IF	6Ω ‡	12Ω	3-174		‡ Includes FM-IF Pri. Winding.
127B	FM 2nd IF		.2Ω			
128	FM 3rd IF	.2Ω	.2Ω	3-175		
129	FM Disc. Trans.	.2Ω	.2Ω	3-176		
130	FM RF Choke		1.5Ω	3-187		
131	RF Choke		3Ω	3-104		
132	Fil. Choke		.2Ω	3-188		
133	" "		.2Ω	3-188		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MAJESTIC PART No.		NOTES
134	Bayonet	6-8V	0.25A	Blue	26-7		Type # 44
135	"			"	26-7		" 44
136	"			"	26-7		" 44
137	"			"	26-7		" 44
138	"			"	26-7		" 44
139	"			"	26-7		" 44
140	"			"	26-7		" 44
141	"			"	26-7		" 44

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MAJESTIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
60	47	300	6-159	1468-00005	5W5Q5	MO.5-45	1FM-45	FM Ant. Coupling. *
61	47	300	6-159	1468-00005	5W5Q5	MO.5-45	1FM-45	BC " " *
62	1000	300	6-230	1468-001	1W5D1	MW.5-21	1FM-21	Filament Bypass. *
63	1000	300	6-230	1468-001	1W5D1	MW.5-21	1FM-21	" " *
64	10000	500	021-74	1467-01	1D3S1	MW.3-11	1FM-11	" "
65	10000	500	021-74	1467-01	1D3S1	MW.3-11	1FM-11	" "
66	10000	500	021-74	1467-01	1D3S1	MW.3-11	1FM-11	" "
67	10000	500	021-74	1467-01	1D3S1	MW.3-11	1FM-11	" "
68	500	500		1468-0005	5W5T5	MO.5-35	1FM-35	Osc. Feedback. Note

* Some models may use 470 MMF in place of Item 47 and 48 in parallel. 470 MMF replacement obtainable under Mfgrs. Part # 020-67.

Note: Not used in all models.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	MAJESTIC PART No.	IRC PART No.	CLAROSTAT PART No.	
69A	2 Meg.	½	13-25	D18-139X	T-116	Volume Control tapped @ 700KΩ.
B	Shaft		Not Req.	A	Not Req.	Attach to 69A per instructions.
70A	2 Meg.	½		D13-139	AM-83-S	Tone Control.
B	Shaft			E	KSS-3	Attach to 70A per instructions.
C	Switch			41	SW-A	" " "

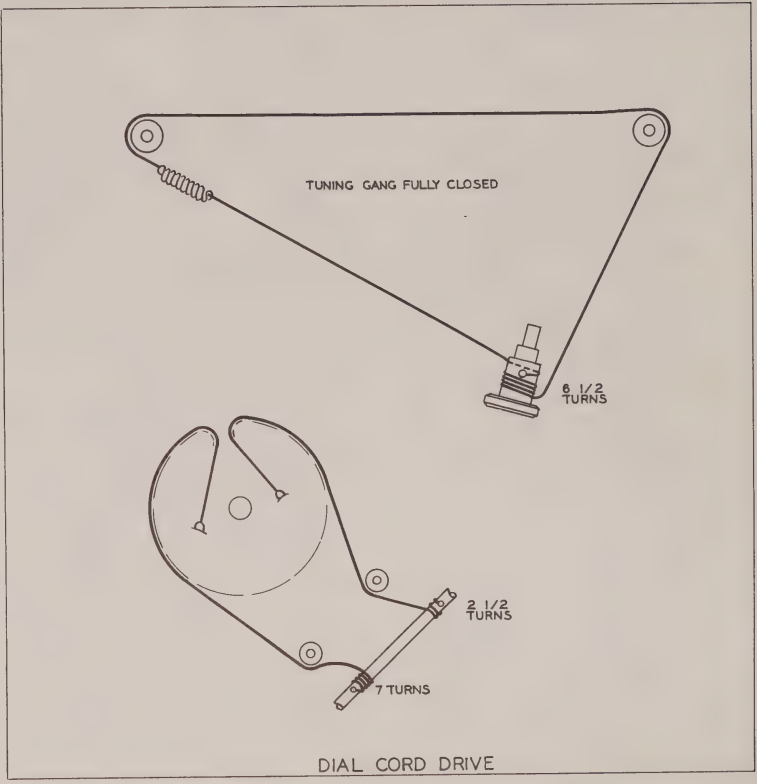
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MAJESTIC PART No.	IRC PART No.	
71	68Ω	½	02-37		Blue-Gray-Blk. FM RF Cathode.
72	47KΩ	1	03-157	BTA-47K	Yl.-Vi.-Or. " " Screen.
73	5600Ω	1	03-118	BTA-5600	Grn.-Blue-Red. " " Plate Decoupling.
74	10Ω	½	01-2		Br.-Blk.-Blk. Parasitic Suppressor.
75	22KΩ	½	01-143	BTS-22K	Red-Red-Or. FM Oscillator Grid.
76	22KΩ	2	04-143	BT-2-22K	Red-Red-Or. FM Converter Screen.
77	22KΩ	½	01-143	BTS-22K	Red-Red-Or. FM Converter Plate Decoupling.
78	100Ω	½	02-170		Br.-Blk.-Br. AM RF Cathode.
79	47KΩ	½	02-156	BTS-47K	Yl.-Vi.-Or. " " Screen.
80	5600Ω	1	03-118	BTA-5600	Grn.-Blue-Red. " " Plate Decoupling.
81	470KΩ	½	02-199	BTS-470K	Yl.-Vi.-Yl. AVC Net.
82	470KΩ	½	02-199	BTS-470K	Yl.-Vi.-Yl. AM Converter Grid.
83	22KΩ	2	04-143	BT-2-22K	Red-Red-Or. " " Screen.
84	22KΩ	½	01-143	BTS-22K	Red-Red-Or. " " Plate Decoupling.
85	22KΩ	½	01-143	BTS-22K	Red-Red-Or. " Oscillator Grid.
86	47KΩ	1	02-156	BTA-47K	Yl.-Vi.-Or. 1st IF Screen.
87	5600Ω	1	03-118	BTA-5600	Grn.-Blue-Red. " " Plate Decoupling.
88	470KΩ	½	02-199	BTS-470K	Yl.-Vi.-Yl. AVC Network.
89	1 Meg.	½	02-213	BTS-1 Meg.	Br.-Blk.-Grn. " "
90	56KΩ	½	01-160	BTS-56K	Grn.-Blue-Or. Diode Filter.
91	470KΩ	½	02-199	BTS-470K	Yl.-Vi.-Yl. " ' Load.
92	82Ω	½	02-41		Gray-Red-Blk. 2nd IF Cathode.
93	47KΩ	½	02-156	BTS-47K	Yl.-Vi.-Or. " " Screen.
94	5600Ω	1	03-118	BTA-5600	Grn.-Blue-Red. " " Plate Decoupling.
95	470KΩ	½	02-199	BTS-470K	Yl.-Vi.-Yl. Series Test Jack.
96	100KΩ	½	02-170	BTS-100K	Br.-Blk.-Yl. Limiter Screen Dropping.
97	33KΩ	½	02-149	BTS-33K	Or.-Or.-Or. " " Bleeder.
98	470KΩ	½	02-199	BTS-470K	Yl.-Vi.-Yl. " Plate Decoupling.
99	47KΩ	½	02-156	BTS-47K	Yl.-Vi.-Or. De-emphasis.
100	2.2 Meg.	½	02-226	BTS-2.2 Meg.	Red-Red-Grn. Tone Compensation.
101	18KΩ	½	01-139	BTS-18K	Br.-Gray-Or. " "
102	10 Meg.	½	02-255	BTS-10 Meg.	Br.-Blk.-Blue. AF Grid.
103	470KΩ	½	02-199	BTS-470K	Yl.-Vi.-Yl. " Plate Load.
104	1 Meg.	½	02-213	BTS-1 Meg.	Br.-Blk.-Grn. Phase Inverter Grid.
105	2200Ω	½	02-100	BTS-2200	Red-Red-Red. " " Cathode.
106	47KΩ	½	02-157	BTS-47K	Yl.-Vi.-Or. " " "
107	47KΩ	½	02-157	BTS-47K	Yl.-Vi.-Or. " " Plate Load.
108	270KΩ	½	01-188	BTS-270K	Red-Vi.-Yl. Output Grid.
109	270KΩ	½	01-188	BTS-270K	Red-Vi.-Yl. " "
110	250Ω	10	9-290	AB-250	" Cathode.
144	12K	½	02-132	BTS-12K	Br.-Red-Or. Filter.

PARTS LIST AND DESCRIPTIONS (Continued)

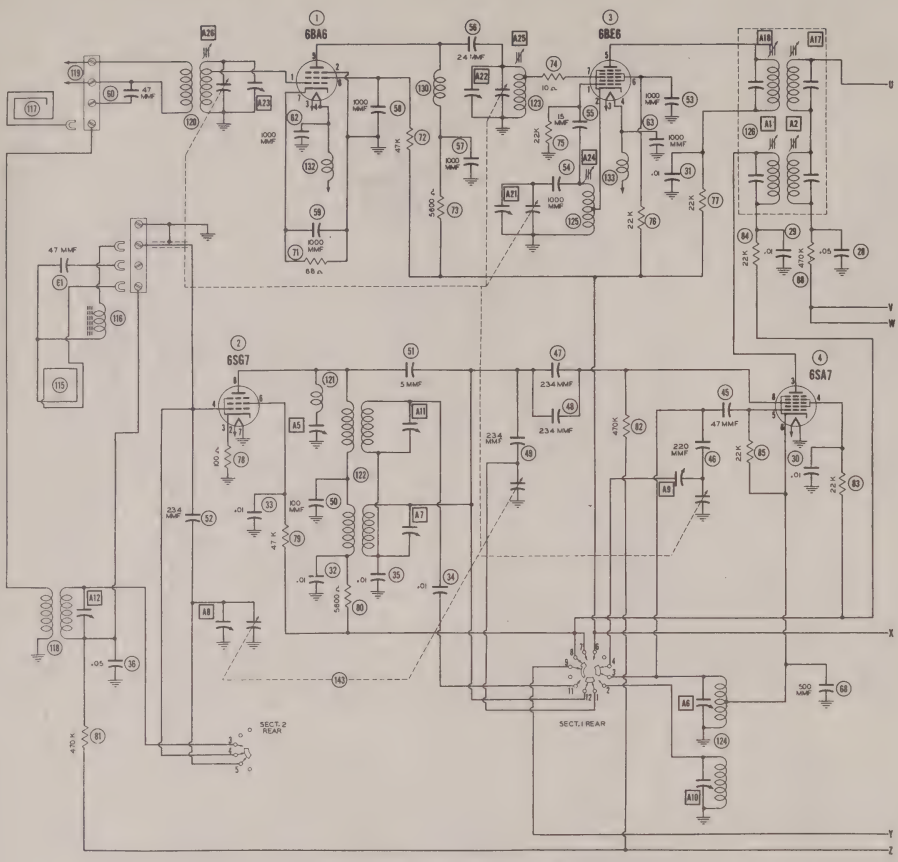
MISCELLANEOUS

ITEM No.	PART NAME	MAJESTIC PART No.	NOTES
142A	Switch	11-58	Band (RF).
142B	"	11-59	Band (Audio and Dial Lights).
143	3 Gang Var. Cap.	7-17	(27-471MMF) each section.
A5	Trimmer	8-63	Wave Trap. Adjustment.
A8	"	8-35	BC Antenna Adjustment.
A9	Padder	8-65	BC Oscillator Adjustment.
A21	Trimmer	8-38	FM Oscillator Adjustment.
A22	"	8-38	FM RF Adjustment.
A23	"	8-38	FM Antenna Adjustment.
	Dial Scale	117-63	FM
	" "	117-90	BC
	" "	117-91	SW
	Knob	128-89	(Tone, Tunings, Volume).
	"	128-90	(Band Switch).



DIAL CORD DRIVE

DATE 4/49 497-11 SET #69 FOLDER 11



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

from	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
T1	6BA6	CT	0V	6.6VAC	0V	250VDC	95VDC	1VDC	
2	6SG7	0V	0V	1.2VDC	0V	1.2VDC	13.8VDC	6.6VAC	255VDC
T3	6BE6	1.4-5.4VDC	0V	6.6VAC	0V	230VDC	120VDC	0V	
4	6SA7	0V	0V	250VDC	105VDC	4-19VDC	0V	6.6VAC	0V
5	6BJ7	0V	0V	0V	-.6VDC	0V	125VDC	6.6VAC	255VDC
T6	6BJ7	0V	0V	1.4VDC	0V	1.4VDC	120VDC	6.6VAC	250VDC
T7	6BH7	0V	0V	0V	0V	-.6VDC	0V	6.6VAC	4.4VDC
T8A	6BH7	-.6VDC	0V	-.6VDC	-.6VDC	0V	90VDC	0V	6.6VAC
T8B	6BH7	-.6VDC	0V	-.6VDC	-.6VDC	0V	97VDC	0V	6.6VAC
9	6BJ7	0V	0V	1.4VDC	41VDC	116VDC	107VDC	6.6VAC	1.4VDC
T10	6BH7	0V	0V	300VDC	315VDC	0V	0V	6.6VAC	20VDC
11	6V6GT	0V	0V	305VDC	215VDC	0V	0V	6.6VAC	20VDC
T12	5U4G	0V		370VDC	0V	350VAC	0V	345VAC	0V

TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

from	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
T1	6BA6	0Ω	0Ω	01Ω	0Ω	70KΩ	110KΩ	68Ω	
2	6SG7	0Ω	0Ω	100Ω	1.8 Meg.	100Ω	150KΩ	.1Ω	90KΩ
T3	6BE6	220Ω	.5Ω	.1Ω	0Ω	90KΩ	90KΩ	10Ω	
4	6SA7	0Ω	0Ω	120KΩ	120KΩ	22KΩ	0Ω	.1Ω	1.8 Meg.
5	6BJ7	0Ω	0Ω	0Ω	2 Meg.	0Ω	140KΩ	.1Ω	90KΩ
T6	6BJ7	0Ω	0Ω	85Ω	0Ω	85Ω	120KΩ	.1Ω	70KΩ
T7	6BH7	0Ω	0Ω	0Ω	60KΩ	0Ω	30KΩ	.1Ω	590KΩ
T8A	6BH7	50KΩ	1Ω	560KΩ	420KΩ	1.1 Meg.	550KΩ	0Ω	.1Ω
T8B	6BH7	400KΩ	0Ω	400KΩ	540KΩ	650KΩ	560KΩ	0Ω	.1Ω
9	6BJ7	0Ω	0Ω	160KΩ	1 Meg.	50KΩ	130KΩ	.1Ω	120KΩ
T10	6BH7	0Ω	0Ω	70KΩ	70KΩ	270KΩ	1MΩ	.1Ω	250Ω
11	6V6GT	0Ω	0Ω	70KΩ	70KΩ	270KΩ	1MΩ	.1Ω	250Ω
T12	5U4G	INF	70KΩ	1MΩ	0Ω	1MΩ	47K	1MΩ	70KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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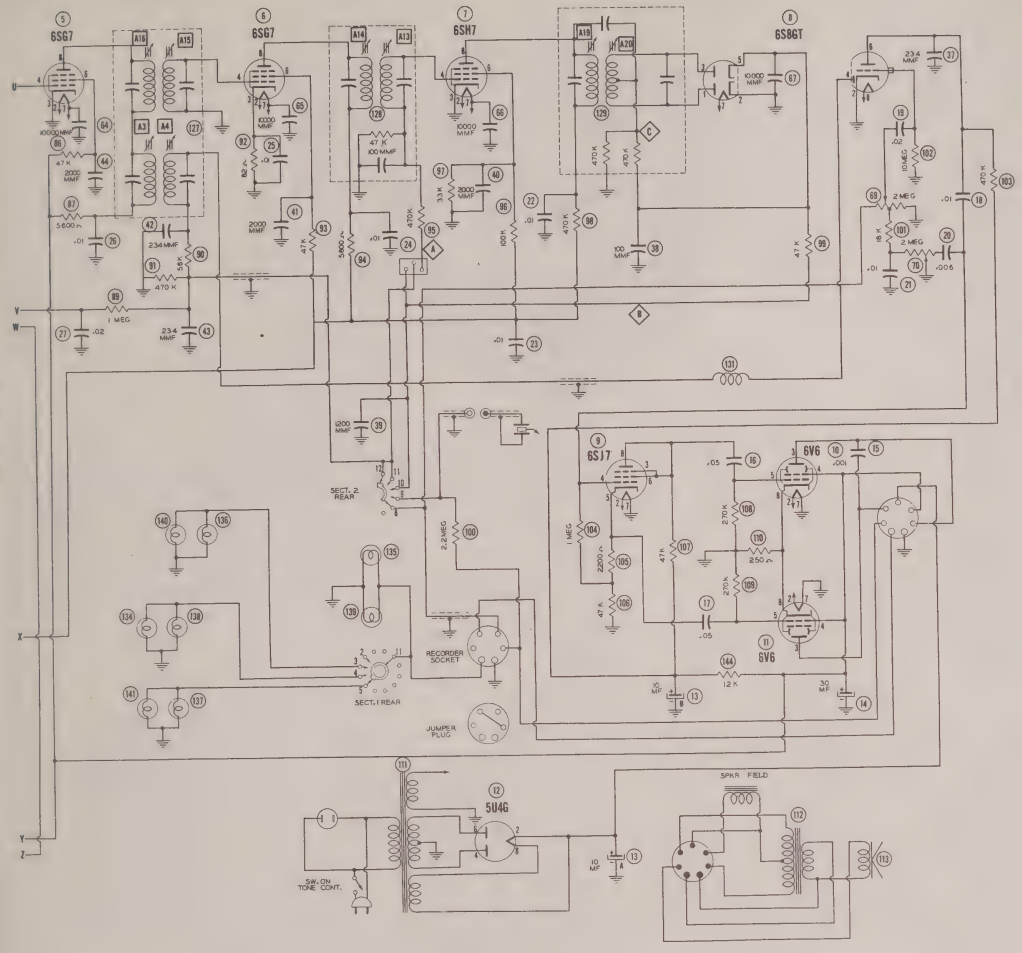

IF = 455 KC AM

IF = 10.7 MC FM

THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD	High side to pin 8(Grid) of 6SA7. Low side to chassis.	455KC	AM (Fully clock-wise).	Tuning cap. fully closed.	Across voice coil	A1,A2 A3,A4	Adjust for maximum output.
2		Loop	455KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust A5 for minimum output.
3		"	1500KC	"	1500KC	"	A6	Adjust for max. output.
4		"	1500KC	"	Tune for max. output.	"	A7,A8	" " " "
5		"	600KC	"	"	"	A9	Rock tuning cap. and adjust for max. output. Repeat steps 3,4, & 5 until no further improvement can be made.
6	400Ω carbon resistor	High side to ext. AM ant. terminal "A1". Low side to chassis.	15MC	"	15MC	"	A10	Adjust for max. output.
7	400Ω carbon resistor	"	15MC	"	Tune for max. output.	"	A11, A12	Rock tuning cap. and adjust for maximum output.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 600KC sweep. Connect the synchronized sweep voltage from the signal generator to the horizontal input of scope. The horizontal sweep voltage may be taken from the power line if signal generator does not have a synchronized voltage output. There may be some phase shift encountered between signal generator and scope horizontal sweep. If provision is made for this in the scope, rotate phase control until a single trace pattern is obtained. If no provision is made for this the same thing may be accomplished by inserting a cap. of suitable value (.01 to .1 MFD) in series with the horizontal synchronizing input.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
8	.01 MFD	High side to pin 4(Grid) of 6SG7 1st IF tube(5). Low side to chassis.	10.7MC (Freq.Mod.)	FM (Counter-clock-wise).	Tuning cap. fully closed.	Vertical input to point (A) Ground to chassis.	A13, A14, A15, A16	Adjust for maximum amplitude & symmetry of pattern per Fig.1.
9	.01 MFD	High side to pin 7(Grid) of 6BE6. Low side to chassis.	10.7MC (Freq.Mod.)	"	"	"	A17, A18	" " " "
10	.01 MFD	"	10.7MC (Freq.Mod.)	"	"	Vertical input to point (B) Ground to chassis.	A19, A20	Alternately adjust A19 for maximum amplitude and A20 for maximum straightness of diagonal line with center of diagonal line on scope horizontal sweep line per Fig.2. Continue with FM RF alignment in step 13.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Attenuate output of signal generator to maintain VTVM reading of approximately 2.0 volts. For plotting IF curve, vary signal generator above and below 10.7MC in steps of 20KC. Record readings of VTVM for each setting of signal generator and plot curve. If curve is not similar to that of Fig.1. repeat last two adjustments and replot curve.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8	.01 MFD	High side to pin 4(Grid) of 6SG7 2nd IF tube(6). Low side to chassis.	10.7MC (Unmod.)	FM	Tuning cap. fully closed.	D C Probe to point (A) Common to chassis	A13, A14	Adjust for maximum deflection. Check IF response curve per pre-alignment instructions.
9	.01 MFD	High side to pin 4(Grid) of 6SG7 1st IF tube (5). Low side to chassis.	10.7MC (Unmod.)	"	"	"	A15, A16	" " " "
10	.01 MFD	High side to pin 7(Grid) of 6BE6. Low side to chassis.	10.7MC (Unmod.)	"	"	"	A17, A18	" " " "
11	.01 MFD	"	10.7MC (Unmod.)	"	"	D C Probe to point (C) Common to chassis	A19	Adjust for maximum deflection.
12	.01 MFD	"	10.7MC (Unmod.)	"	"	D C Probe to point (B) Common to chassis	A20	Adjust for zero deflection. Continue with FM RF alignment in step 13.

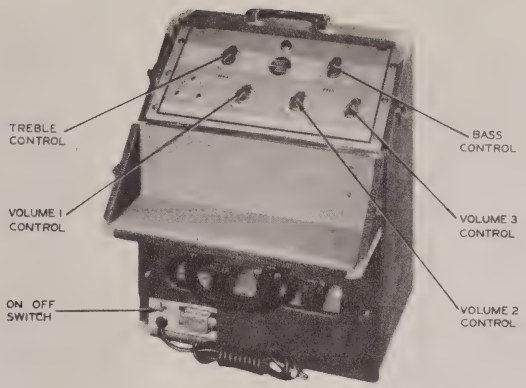
FM RF ALIGNMENT

Attenuate output of signal generator to maintain VTVM reading of approximately 2.0 volts.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
13	Direct	Each side to one FM ant. terminal	108MC (Unmod.)	FM	108MC	D C Probe to point (A) Common to chassis	A21	Adjust for maximum deflection.
14	"	"	108MC (Unmod.)	"	Tune for maximum deflection.	"	A22, A23	Rock tuning cap. and adjust for max. deflection.
15	"	"	88MC (Unmod.)	"	88MC	"	A24	Adjust for max. deflection.
16	"	"	88MC (Unmod.)	"	Tune for maximum deflection.	"	A25, A26	Rock tuning cap. and adjust for maximum deflection. Repeat steps 13 through 16 until no further improvement can be made.

FIG. 1

FIG. 2



MASCO MODEL MAP-18

TRADE NAME Masco, Model MAP-18
MANUFACTURER Mark Simpson Mfg. Co., Inc., 32-28 49th St., Long Island City 3, New York.
TYPE SET AC Operated 3 Channel Musical Instrument Amplifier.
TUBES (EIGHT) Types 6SF5 Input 1 Amp., 6SF5 Input 2 Amp., 6SF5 Input 3 Amp.,6SJ7 1st AF Amp., 6SL7GT 2nd AF-Phase Inv.,(2) 6L6G Power Output, 5V4G Rectifier.
POWER SUPPLY RATING 105-125 Volts AC
.80 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SF5	0V	1VDC	0V	0V	80VDC	135VDC	*16.5VDC	*16.5VDC
2	6SF5	0V	1VDC	0V	0V	80VDC	135VDC	*16.5VDC	*16.5VDC
3	6SF5	0V	1VDC	0V	0V	80VDC	135VDC	*16.5VDC	*16.5VDC
4	6SJ7	0V	*16.5VDC	1.3VDC	0V	1.3VDC	36VDC	*16.5VDC	60VDC
5	6SL7GT	0V	140VDC	1.2VDC	0V	130VDC	1.3VDC	*16.5VDC	*16.5VDC
6	6L6G	0V	*16.5VDC	300VDC	260VDC	0V	140VDC	*16.5VDC	16.5VDC
7	6L6G	0V	*16.5VDC	300VDC	260VDC	0V	0V	*16.5VDC	16.5VDC
8	5V4G	0V	280VDC	0V	240VAC	0V	240VAC	*16.5VDC	280VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SF5	0Ω	4.7KΩ	0Ω	Inf.	*340KΩ	135KΩ	130Ω	130Ω
2	6SF5	0Ω	4.5KΩ	0Ω	Inf.	*340KΩ	135KΩ	130Ω	130Ω
3	6SF5	0Ω	5KΩ	100KΩ	Inf.	*340KΩ	135KΩ	130Ω	130Ω
4	6SJ7	0Ω	130Ω	1KΩ	270KΩ	1KΩ	*500KΩ	130Ω	*140KΩ
5	6SL7GT	15KΩ	*100KΩ	1.5KΩ	5 Meg.	*100KΩ	1.5KΩ	130Ω	130Ω
6	6L6G	0Ω	130Ω	*50.5Ω	*2.5KΩ	250KΩ	200KΩ	130Ω	125Ω
7	6L6G	0Ω	130Ω	*50.5Ω	*2.5KΩ	200KΩ	Inf.	130Ω	125Ω
8	5V4G	Inf.	90KΩ	Inf.	40Ω	Inf.	40Ω	Inf.	90KΩ

* 6.3VAC measured between filaments.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volts.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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DATE 4/49 497-12 SET #59 FOLDER 12

MASCO
MODEL MAP-18

PARTS LIST AND DESCRIPTIONS

MASCO MODEL MAP-18

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MASCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Input #1 Pre-Amp	6SF5	6SF5	6AB	
2	Input #2 Pre-Amp	6SF5	6SF5	6AB	
3	Input #3 Pre-Amp	6SF5	6SF5	6AB	
4	1st AF Amp.	6SJ7	6SJ7	8N	
5	2nd AF-Phase Inv	6SL7GT	6SL7GT	8BD	
6	Power Output	6L6G	6L6G	7AC	
7	Power Output	6L6G	6L6G	7AC	
8	Rectifier	5V4G	5V4G	5L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MASCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9	16	450		PRS450/16	BR1645	M-16-450	UT-16	Filter.
10	16	450		PRS450/16	BR1645	M-16-450	UT-16	"
11A	10	450		AF22J	UP1145	DY-2X10-450	EL-210	"
11B	10	450						"
12	50	50		PRS50/50	BR505	M-50-50	TA-550	Output Cath. Bypass.
13	8	450		PRS450/8	BR845	M-8-450	UT-8	Decoupling.
14	50	50		PRS50/50	BR505	M-50-50	TA-550	1st AF Cath. Bypass.
15	10	50		PRS50/10	BR105	M-10-50	TA-510	1st Input Cath.Bypass.
16	10	50		PRS50/10	BR105	M-10-50	TA-510	2nd " " "
17	10	50		PRS50/10	BR105	M-10-50	TA-510	3rd " " "
18	.1	600		630T-.1	DYRT6010	XDMR6-.1	TM-1	Line Filter.
19	.1	600		684-1	GT6P1	ST-6-1	TC-1	Audio Coupling.
20	.1	600		684-1	GT6P1	ST-6-1	TC-1	" "
21	.01	400		484-01	GT4S1	ST-4-01	TC-11	2nd AF Cathode Bypass Note.
22	.1	600		684-1	GT6P1	ST-6-1	TC-1	Audio Coupling.
23	.005	600		684-005	GT6D5	ST-6-005	TC-25	Tone Compensation.
24	.1	600		684-1	GT6P1	ST-6-1	TC-1	1st AF Screen Bypass.
25	.01	400		484-01	GT4S1	ST-4-01	TC-11	Audio Coupling.
26	.01	400		484-01	GT4S1	ST-4-01	TC-11	" "
27	.01	400		484-01	GT4S1	ST-4-01	TC-11	" "
28	500	500		1468-0005	SW5T5	MO.5-35	1FM-35	Tone Compensation.
29	100	500		1468-0001	SW5T1	MO.5-31	1FM-31	" "
30	500	500		1468-0005	SW5T5	MO.5-35	1FM-35	" "
31	500	500		1468-0005	SW5T5	MO.5-35	1FM-35	" "

Note: Not used in all models.

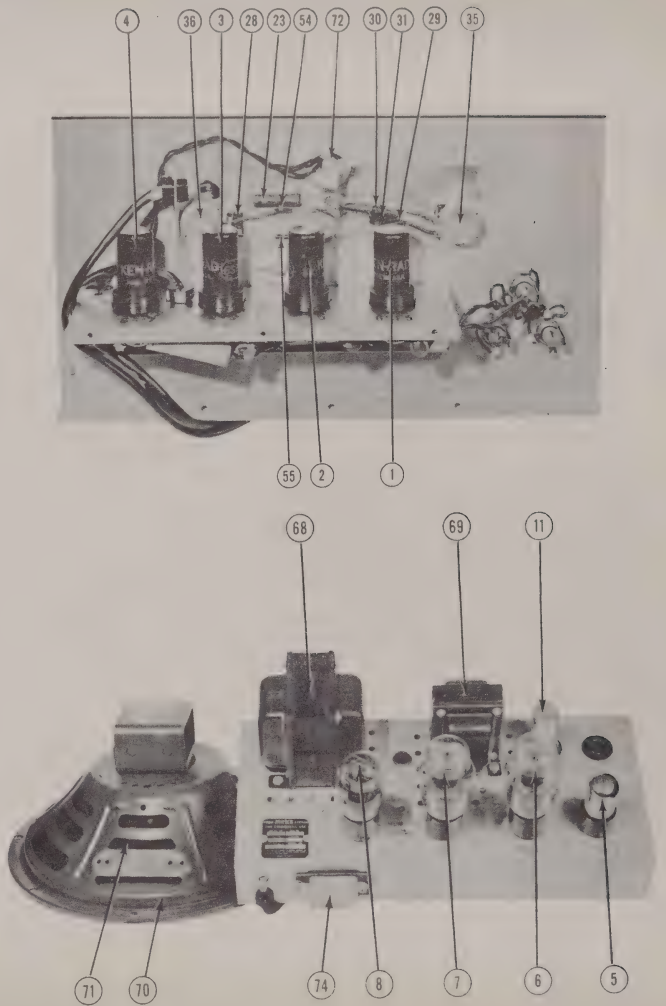
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
32A	500KΩ	½		D13-133	M-60-Z	Volume 1 Control.
32B	Shaft			A	Not Req.	Attach to 32A per instructions.
33A	500KΩ	½		D13-133	M-60-Z	Volume 2 Control.
33B	Shaft			A	Not Req.	Attach to 33A per instructions.
34A	500KΩ	½		D13-133	M-60-Z	Volume 3 Control.
34B	Shaft			A	Not Req.	Attach to 34A per instructions.
35	5 Meg.	½			M-69-Z	Treble Control.
36	5 Meg.	½			M-69-Z	Bass Control.
37	50Ω	1		W-50	43-50	Hum Balance Control.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	IDENTIFICATION CODES
38	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 1st Pre Amp. Grid.
39	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd " " "
40	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 3rd " " "
41	4700Ω	½		BTS-4700	Yl.-Vi.-Red. 1st " " Cathode.
42	4700Ω	½		BTS-4700	Yl.-Vi.-Red. 2nd " " "
43	4700Ω	½		BTS-4700	Yl.-Vi.-Red. 3rd " " "
44	2700Ω	½		BTS-2700	Red-Vi.-Red. 1st " " Plate Load.
45	2700Ω	½		BTS-2700	Red-Vi.-Red. 2nd " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	
46	270Ω	½		BTS-2700	Red-Vi.-Red. 3rd Pre Amp Plate Load
47	270KΩ	½		BTS-270K	Red-Vi.-Yl. Isolation.
48	270KΩ	½		BTS-270K	Red-Vi.-Yl. "
49	270KΩ	½		BTS-270K	Red-Vi.-Yl. "
50	1000Ω	½		BTS-1000	Br.-Blk.-Red. 1st AF Cathode.
51	100KΩ	½		BTS-100K	Br.-Blk.-Yl. " " Plate Load.
52	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. " " Screen. See Note.
53	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Decoupling.
54	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Tone Compensation.
55	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. " "
56	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd AF Plate Load.
57	1500Ω	½		BTS-1500	Br.-Grn.-Red. " " Cathode.
58	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Plate Load.
59	1500Ω	½		BTS-1500	Br.-Grn.-Red. " " Cathode.
60	15KΩ	½		BTS-15K	Br.-Grn.-Or. " " Grid.
61	270KΩ	½		BTS-270K	Red-Vi.-Yl. Output Grid.
62	270KΩ	½		BTS-270K	Red-Vi.-Yl. " "
63	125Ω	10		AB-125	" Cathode.
64	2500Ω	10		AB-2500	Filter.
65	10KΩ	½		BTS-10K	Br.-Blk.-Or. " See Note. 1
66	27KΩ	½		BTS-27K	Red-Vi.-Or. "
67	10KΩ	½		BTS-10K	Br.-Blk.-Or. Feedback.

Note: Some models use 270KΩ resistor in this application.
Note 1:Some models use 27KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
68	125 VAC Tap @ 117 VAC. @ .80A	500 VAC CT 134 ADC	5 VAC @ 2A	5.9 VAC @ 3.4A	P-17B			

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
69	5000Ω CT	8Ω	110Ω CT	.6Ω	T-17A	A-3800 *	T22S70	A-3131 *	*Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	V.C. IMP.	MASCO PART No.	JENSEN PART No.	QUAM PART No.	
70	PM	8Ω	P12R	ST-103 Mod. P12-R	12A6	
	CONE DIA.	V.C. DIA.				
71	11 3/8"	1"				

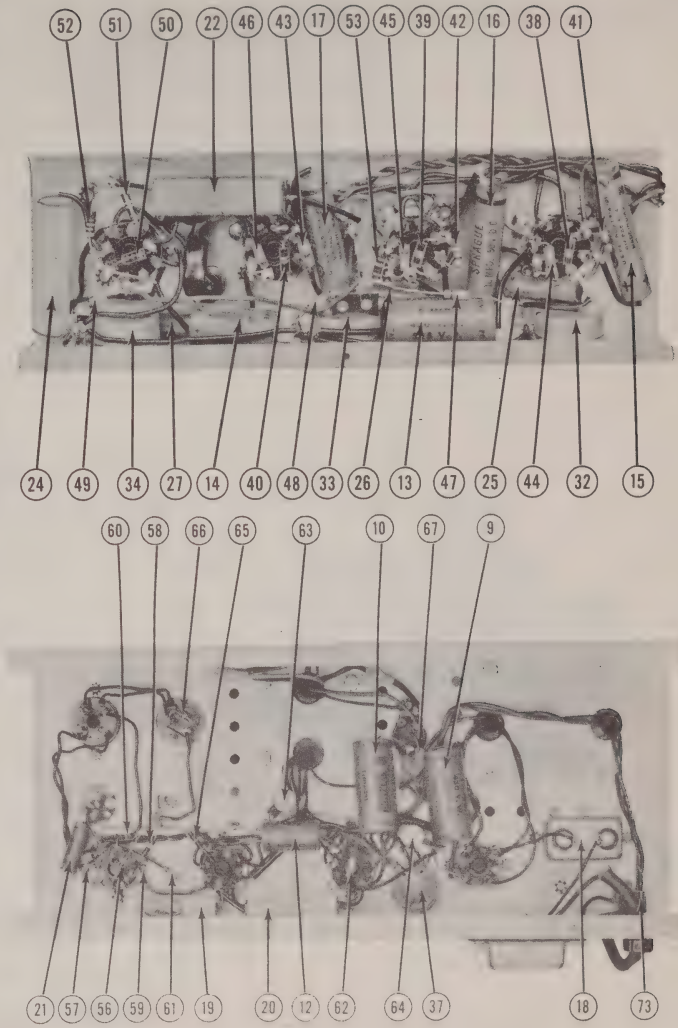
DIAL LIGHT

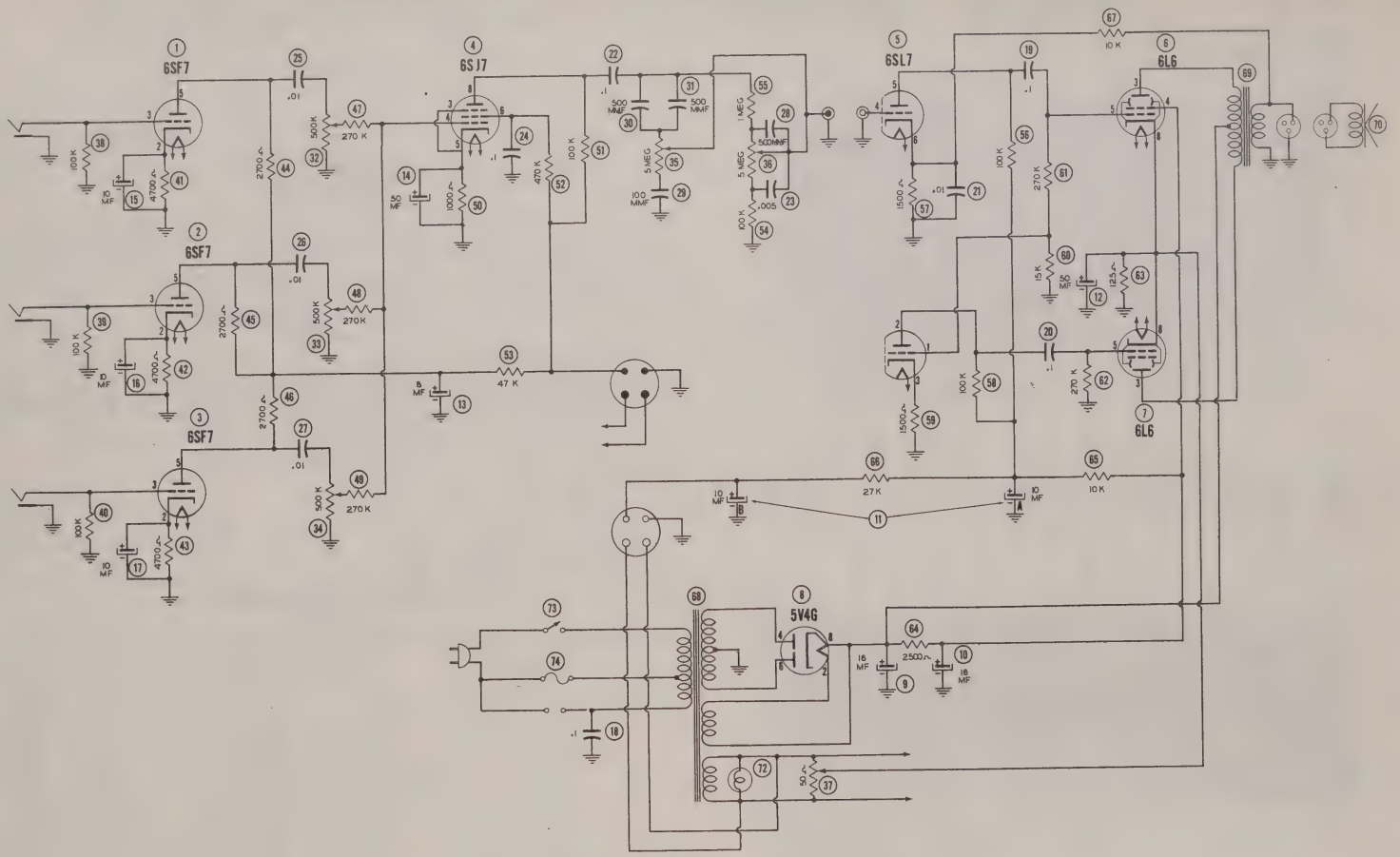
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MASCO PART No.		
72	Bayonet	6-8V	0.15A	Brown			Type # 47

MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
73	Switch		Power
74	Fuse		1.5 Amp.

CHASSIS—BOTTOM VIEW





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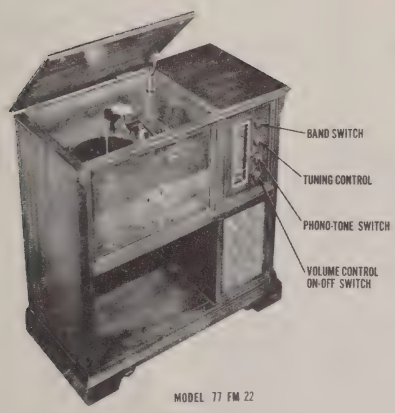
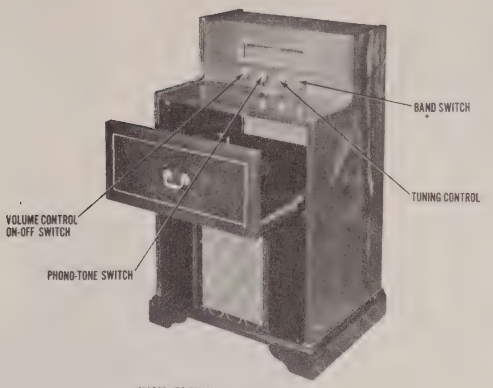
MOTOROLA
MODELS 78FM21, 78FM21M (CH. HS-132), 78FM22M, (CH. HS-128)



MODEL 77 FM 22



MODEL 77 FM 21

MOTOROLA MODEL 78FM22M

TRADE NAME	Motorola, Models 78FM21, 78FM21M (Ch. HS-132), 78FM22M (Ch HS-128).
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Ant.
TUBES (SIX)	Types 12AT7 FM Converter, 12BE6 FM IF Amp.-AM Converter, 12BA6 IF Amp., 12BA6 FM-IF Amp., 19T8 Det.-AVC-AF, 50B5 Power Output.
POWER SUPPLY RATING	105-125 Volts AC. .35 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC FREQ. MOD. 88-108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Use an insulated alignment screwdriver for all adjustments.

AM ALIGNMENT

If receiver oscillates during these steps connect B- to chassis. Remove short when finished with these steps.

Use no more signal than is necessary to obtain a satisfactory output meter reading. Volume control should be set for maximum volume.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to pin 7(Grid) of 12BE6. Low side to B-.	455KC	AM	Tuning cap. fully open.	Across voice coil	A1,A2 A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum mod.
2	.1 MFD	"	1620KC	"	"	"	A5	Adjust for max. output.
3		Loop	1400KC	"	Tune for max. output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FOR FM ALIGNMENT SEE PAGE 2

MOTOROLA
MODELS 78FM21, 78FM21M
(CH. HS-132), 78FM22M, (CH. HS-128)

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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DATE 4/49 · 497-13 SET #59 FOLDER 13

FOR AM ALIGNMENT SEE PAGE 1

FM ALIGNMENT USING AM SIGNAL GENERATOR AND OUTPUT METER

Use amp. modulated signal with 400 ∿ 30% modulation. Use no more signal than is necessary to obtain a satisfactory output meter reading. Volume control should be set for maximum volume.

Once the discriminator secondary (A21) has been aligned no FM adjustments should be made with an AM signal.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
4	.001 MFD	High side to pin 7(Grid) of 12AT7 Low side to B-.	4.3MC (400∿ Mod.)	FM (Clock-wise).	Tuning slugs fully out.	Across voice coil	A7,A8 A9,A10 A11, A12, A13	Adjust A21 completely counter-clockwise. Adjust A7 thru A13 for maximum output.
5	300Ω carbon resistor	High side to center terminal on loop. Low side to B-.	4.3MC (400∿ Mod.)	"	"	"	A14	Adjust for minimum output.
	If receiver does not have FM Osc. trimmer (A16) perform step 6 and disregard steps 6A & 6B. If receiver does have FM Osc. trimmer (A16) then disregard step 6 and perform steps 6A & 6B.							
6	300Ω carbon resistor	"	105MC	"	105MC	"	A15	Adjust for max. output.
6A	300Ω carbon resistor	"	90MC	"	90MC	"	A16	" " " "
5B	300Ω carbon resistor	"	105MC	"	105MC	"	A15	Adjust for max. output. Repeat steps 6A & 6B until no further improvement can be made.
7	300Ω carbon resistor	"	90MC	"	Tune for maximum output.	"	A17, A18	Adjust for max. output.
8	300Ω carbon resistor	"	105MC	"	"	"	A19, A20	Adjust for max. output. Repeat steps 7 & 8 until no further improvement can be made.
9	. . .	Signal generator output lead near receiver. No direct connection.	105MC	"	"	"	A17	Adjust for max. output.
10	.001 MFD	High side to pin 7(Grid) of 12AT7 Low side to B-.	4.3MC	"	Tuning slugs fully out.	"	A21	Adjust for minimum output. The correct adjustment is a sharply defined dip between two peaks. Make this adjustment very carefully as misalignment will result in distortion of FM reception.

FM ALIGNMENT USING FM SIGNAL GENERATOR OSCILLOSCOPE AND OUTPUT METER

Connect sync sweep voltage from signal generator in series with 500KΩ potentiometer to horizontal input terminals of scope. Connect .002 MFD cap. across horizontal input terminals. Adjustment of the 500KΩ potentiometer should enable you to maintain a single pattern. If this is not the case then different values of resistance and capacitance should be tried until a single pattern is possible in all adjustments with the scope.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
4	.001 MFD	High side to pin 1(Grid) of 6BA6 3rd FM IF tube (4). Low side to B-.	4.3MC (Freq.Mod. 60∿ Mod. 125KC deviation.)	FM (Clock-wise)	Tuning slugs fully out.	Vertical input to point (A) Ground to B-.	A7	Turn A21 out several turns. Adjust A7 for maximum amplitude of pattern per Fig.1.
5	.001 MFD	"	4.3MC (Freq.Mod. 60∿ Mod. 125KC deviation.)	"	"	"	A21	Adjust for symmetrical pattern of Fig.1 with peaks occurring at about 100KC above & below 4.3MC and with maximum straightness between peaks. Adjust A7 & A21 until no further improvement can be made.
6	.001 MFD	High side to pin 1(Grid) of 6BA6 2nd FM IF tube (3). Low side to B-.	4.3MC (Freq.Mod. 60∿ Mod. 125KC deviation.)	FM (Clock-wise)	Tuning slugs fully out.	Vertical input to point (A) Ground to B-.	A8,A9	Adjust for symmetrical pattern with maximum straightness between peaks with peaks occurring at a slightly lower deviation.
7	.001 MFD	High side to pin 7(Grid) of 6BE6. Low side to B-.	4.3MC (Freq.Mod. 60∿ Mod. 125KC deviation.	"	"	"	A10, A11	Adjust for symmetrical pattern with maximum straightness between peaks.
8	.001 MFD	High side to center terminal on loop. Low side to B-.	4.3MC (Freq.Mod. 60∿ Mod. 125KC deviation.	"	"	"	A12, A13	Adjust for symmetrical pattern with maximum straightness between peaks.
9	.001 MFD	"	4.3MC (Freq.Mod. 60∿ Mod. 125KC deviation.	"	"	"	A14	Adjust for minimum amplitude.
	If receiver does not have FM Osc. trimmer (A16) perform step 10 and disregard steps 10A & 10B. If receiver does have FM Osc. trimmer (A16) then disregard step 10 and perform steps 10A & 10B.							
10	300Ω carbon resistor	High side to center terminal on loop. Low side to B-.	105MC (Freq. Mod 400 ∿ 22 1/2KC Deviation)	FM	105MC	Across voice coil	A15	Adjust for max. output.
10A	300Ω carbon resistor	"	90MC (Freq.Mod 400 ∿ 22 1/2KC Deviation)	"	90MC	"	A16	Adjust for max. output.
10B	300Ω carbon resistor	"	105MC (Freq.Mod 400 ∿ 22 1/2KC Deviation)	"	105MC	"	A15	Adjust for max. output. Repeat steps 10A & 10B until no further improvement can be made.
11	300Ω carbon resistor	"	90MC (Freq.Mod 400 ∿ 22 1/2KC Deviation	"	Tune for max. output	"	A17 A18	Adjust for max. output.
12	300Ω carbon resistor	"	105MC (Freq.Mod 400 ∿ 22 1/2KC Deviation)	"	"	"	A19, A20	Adjust for max. output. Repeat steps 11 & 12 until no further improvement can be made.
13	.	Signal generator output lead near receiver. No direct connection.	105MC (Freq.Mod 400 ∿ 22 1/2KC Deviation)	"	"	"	A17	Adjust for max. output.

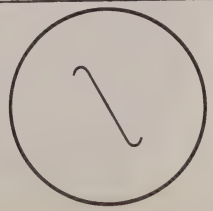
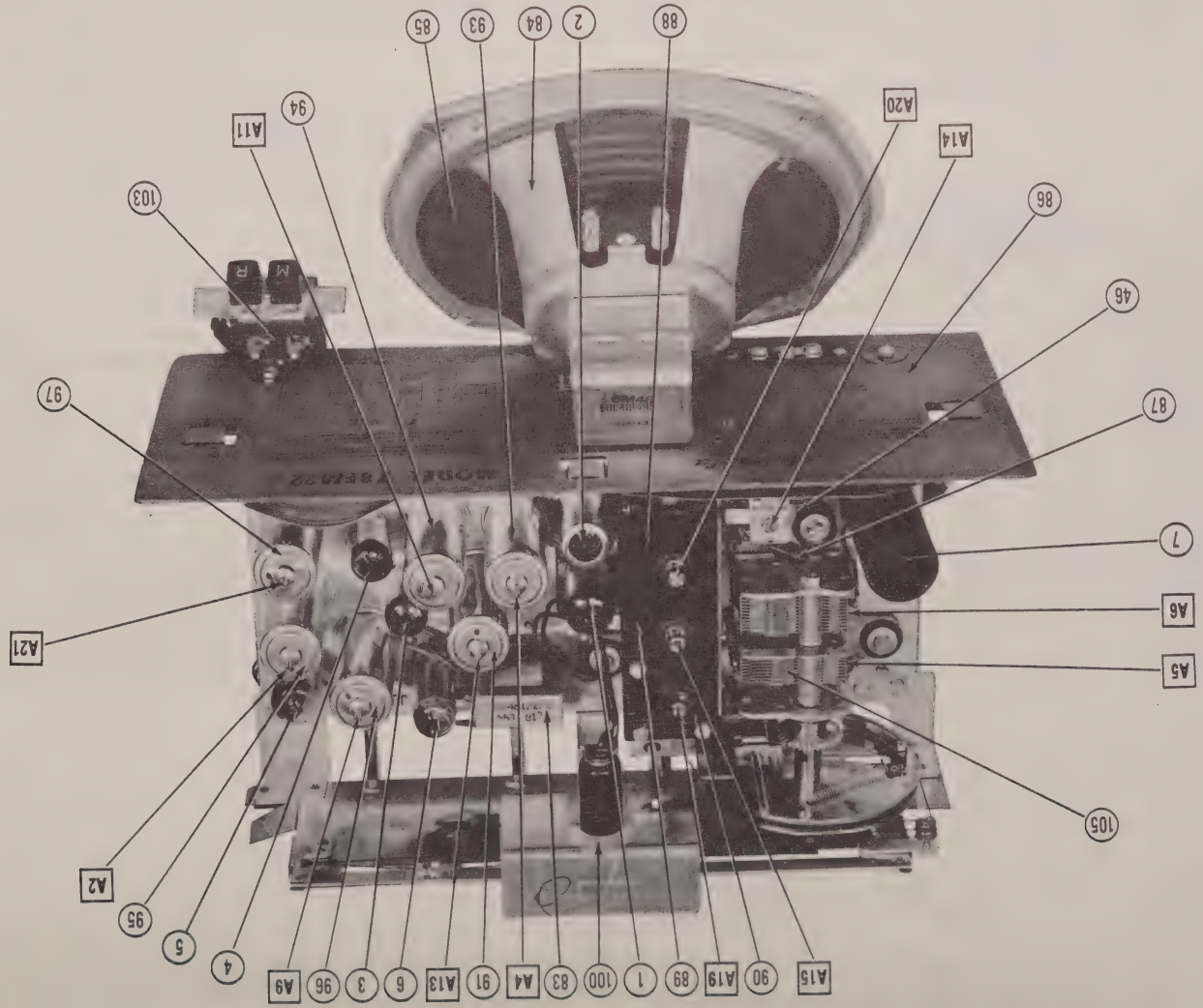


FIG. 1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A2
95
5
4
A9
96
3
6
A13
91
A4
83
100
1
89
A19
90
A15

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM Converter	12AT7	12AT7		
2	FM IF AM Conv.	12BE6	12BE6	7CH	
3	IF Amp.	12BA6	12BA6	7BK	
4	FM IF Amp.	12BA6	12BA6	7BK	
5	Det.-AVC-AF	1978	1978		
6	Power Output	50B5	50B5	7BZ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	200	23B470429		UP42215	DY-403020-150	EL-224	■ Filter.
7B	20	150						▲ Filter.
7C	20	150						● Filter.
8	8	50	23A481316	PRS 50/10	BR-105	M-10-50	TA-510	Cathode Bypass.
9	8	50	23A481316	PRS 50/10	BR-105	M-10-50	TA-510	Stabalizing Cap.
10	.05	400	8K471635	484-.05	GT4S5	ST-4-05	TC-15	Line Filter.
11	.05	400	8K471635	484-.05	GT4S5	ST-4-05	72P1	" Isolation.
12	.05	400	8K471635	484-.05	GT4S5	ST-4-05	TC-15	Hash Filter.
13	.02	400	8S9802	484-.02	GT4S2	ST-4-02	TC-12	Output Plate Bypass.
14	.01	400	8S9809	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling.
15	.005	100	8A24966	484-.005	GT6D5	ST-6-005	TC-25	" "
16	.1	200	8K471636	484-.1	GT2P1	ST-2-1	TC-1	AF Plate Decoup.
17	.005	100	8A24966	484-.005	GT6D5	ST-6-005	TC-25	Tone Comp.
18	.1	400	8S9807	484-.1	GT4P1	ST-4-1	TC-1	Phono Isolation.
19	.05	400	8K471635	484-.05	GT4S5	ST-4-05	TC-15	RF Bypass.
20	.01	200	8S9825	484-.01	GT2S1	ST-4-01	TC-11	Fil. Bypass.
21	.01	200	8S9825	484-.01	GT2S1	ST-4-01	TC-11	FM 3rd IF Decoup.
22	.01	100	8S9801	484-.01	GT2S1	ST-4-01	TC-11	FM 3rd IF Grid Filter.
23	.05	400	8K471635	484-.05	GT4S5	ST-4-05	TC-15	FM 2nd IF Decoupling.
24	.01	100	8S9801	484-01	GT2S1	ST-4-01	TC-11	AVC Filter.
25	.1	200	8K471636	484-.1	GT2P1	ST-2-1	TC-1	Decoupling.
26	.01	200	8S9825	484-01	GT2S1	ST-4-01	TC-11	RF Bypass.Pwr. Supp.
27	.01	100	8S9801	484-01	GT2S1	ST-4-01	TC-11	FM 1st IF Cath.Bypass
28	.01	200	8S9825	484-01	GT2S1	ST-4-01	TC-11	FM 2nd Converter Plate Decoupling.
29	.005	100	8A24966	484-.005	GT6D5	ST-6-005	TC-25	Filament Bypass.
30	.02	400	8A471019	484-02	GT4S2	ST-4-02	TC-12	RF Bypass.
31	4700	500	21B470567	1467-005	1D5D5	MW.5-25	1FM-25	Tone Compensation.Cer.
32	250	500	21K77375	1468-.00025	5W5T25	MO.5-325	1FM-325	AF Plate Bypass. Cer.
33	250	500	21K77375	1468-.00025	5W5T25	MO.5-325	1FM-325	Tone compensation. "
34	1000	500	21K478410	1464-001	2R5D1	MW5.5-21	MS-21	Diode Load Cap. Cer. See Note.
35	1000	500	21K478410	1464-001	2R5D1	MW5.5-21	MS-21	Diode Load Cap. Cer. See Note.
36	1000	500	21K478410	1468-001	1W5D1	MO.3-21	1FM-21	De-emphasis "
37	100	500	21B77286	1469-0001	5R5T1	MOS.5-31	MS-31	RF Filter. Silver.
38	4700	500	21B470567	1467-.005	1D5D5	MW.5-25	1FM-25	RF Bypass. Cer.
39	100	500	21B77286	1469-0001	5R5T1	MOS.5-31	MS-31	Diode RF Filter.Silver
40	100	300	21B77286	1469-0001	5R5T1	MOS.5-31	MS-31	" " " Cer.
41	500	300	21B77286	1468-.00005	5W5T5	MO.5-35	1FM-35	AM RF Coupling. "
42	50	500	21K77373	1468-00005	5W5Q5	MO.5-45	1FM-45	AM Osc. Grid Cap.
43A	250	300	21B484337	1469-00025	5R5T25	MOS.5-325	MS-325	FM Osc.Feedback.Cer.
43B	250	300		1469-00025	5R5T25	MOS.5-325	MS-325	FM RF Coupling.
44	1000	500	21K478410	1468-.001	1W5D1	MO.3-21	1FM-21	RF Bypass. Cer.
45	7	300	21K484347	1468-00001	5W5Q1	MO.5-41	1FM-41	RF Coupling. Cer.
46	7	300	21K484347	1468-00001	5W5Q1	MO.5-41	1FM-41	FM Ant. Coupling.Cer.
47	50	500	21K77373	1468-00005	5W5Q5	MO.5-45	1FM-45	FM Line Ant. Coupling.

Note: When either items 34 or 35 must be replaced, replace both with capacitors of equal value.

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: MEISSNER PART No.	
86	Loop Ant.	0Ω	2.5Ω	24K481708		
87	Wave trap coil.		5Ω	24A77240		
88	FM RF Coil.		0Ω			Items 88, 89 & 90 are slug tuned and ganged together.
89	FM Osc Coil		0Ω			
90	FM Variable IF		0Ω			
91	FM 1st IF	.6Ω	.8Ω	24B481391 *		* Does not include shield.
92	AM Osc Coil	1Ω	9Ω	24A470556	14-1060	
93A	AM 1st IF	13Ω	13Ω	24B75487 *		Use with shield having iron core Sleeve.
93B	AM 1st IF			24B482863		Use with plain shield.
94	FM 2nd IF	.8Ω	1Ω	24B471670 *		
95A	AM 2nd IF	14Ω	14Ω	24B471666 *		Use with shield having iron core sleeve.
95B	AM 2nd IF			24B482865		Use with plain shield.
96	FM 3rd IF	.8Ω	.8Ω	24B471672 *		
97	FM Det.Trans	4.4Ω	1.8Ω	24B481393 *		
98	RF Choke		13Ω	24A470505		
99	Fil. Choke		.1Ω	24A74989		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA	NOTES
100	Screw	117V			65A470930		

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
101	Switch	40B470432	Band.
102	Switch	40K471508	Phono-Tone.
103	Switch	40K471447	Motor-Reject.
104	Rectifier	48B90140	Selenium.
105	2 Gang Var. Cap.	19K75415	(27-462MMF, 27-187MMF).
A14	Trimmer	20A71125	Wave Trap Adjustment.
	Dial Pointer	52B481704	
	Glass Dial Scale.	34C481737	(Ch. HS-128)
	Glass Dial Scale.	34K485921	(Ch. HS-132).

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	
48A	1 Meg.	½	18K471518	D13-137X	AT-98	Volume Control tapped @ 300KΩ.
48B	Shaft		Not Req.	E	KS8-3	Attach to 48A per instructions.
48C	Switch		" "	41	SW-A	" " "

RESISTORS

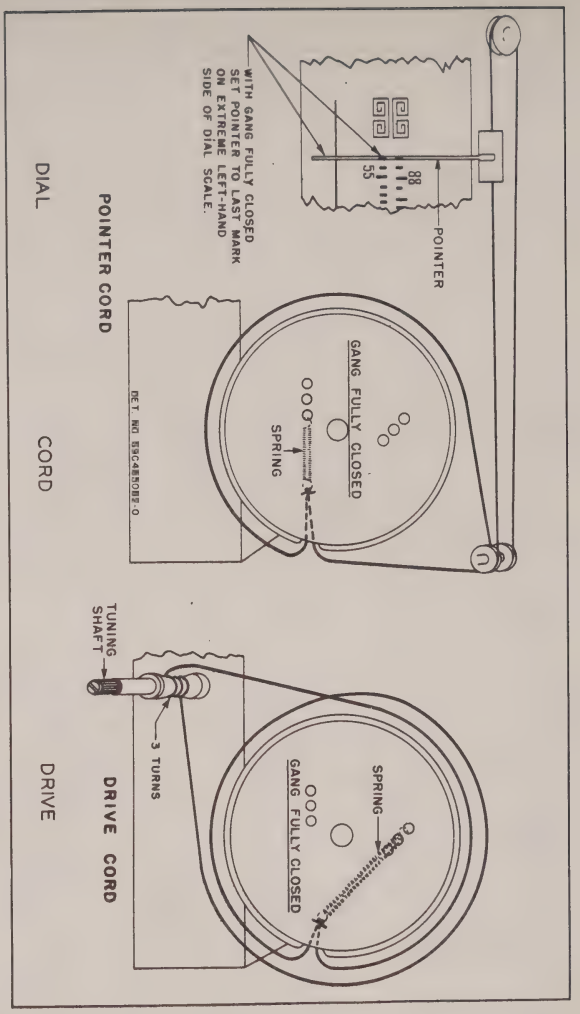
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.		
49	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn.	1st FM Converter Grid.
50	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn.	2nd FM Converter Grid.
51	8200Ω	1	6R5610	BTA-8200	Gray-Red-Red.	1st FM Converter Plate Load.
52	22KΩ	½	6R6028	BTS-22K	Red-Red-Or.	2nd FM Converter Plate Decoup
53	22KΩ	½	6R6028	BTS-22K	Red-Red-Or.	AM Oscillator Grid.
54	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn.	AM Converter Grid.
55	330Ω	½	6R6022		Or.-Or.-Br.	1st FM IF Cathode.
56	1000Ω	½	6R6301	BTS-1000	Br.-Blk.-Red.	Decoupling.
57	56KΩ	½	6R6378	BTS-56K	Grn.-Blue-Or.	1st FM IF Transformer Shunt.
58	33KΩ	½	6R6012	BTS-33K	Or.-Or.-Or.	2nd FM IF Transformer Shunt.
59	68Ω	½	6R2039		Blue-Gray-Blk.	FM 2nd IF Cathode.
60	2.2 Meg.	½	6R3927	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network.
61	150KΩ	½	6R6182	BTS-150K	Br.-Grn.-Yl.	Line Isolation.
62	1000Ω	½	6R6301	BTS-1000	Br.-Blk.-Red.	FM 2nd IF Decoupling.
63	47KΩ	½	6R6056	BTS-47K	Yl.-Vi.-Or.	Diode RF Filter.
64	33KΩ	½	6R6012	BTS-33K	Or.-Or.-Or.	3rd FM IF Transformer Shunt.
65	220KΩ	½	6R6015	BTS-220K	Red-Red-Yl.	3rd IF Grid.
66	1000Ω	½	6R6301	BTS-1000	Br.-Blk.-Red.	3rd IF Decoupling.
67	470Ω	½	6R3947	BTS-470	Yl.-Vi.-Br.	RF Filter.
68	22KΩ	½	6R6028	BTS-22K	Red-Red-Or.	De-emphasis.
69	15KΩ	½	6R2119	BTS-15K	Br.-Grn.-Or.	Ratio Detector Diode Load.
70	4700Ω	½	6R6039	BTS-4700	Yl.-Vi.-Red.	" " " "
71	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network.
72	4.7 Meg.	½	6R2122	BTS-4.7 Meg.	Yl.-Vi.-Grn.	AF Grid.
73	100KΩ	½	6R6075	BTS-100K	Br.-Blk.-Yl.	" Plate Load.
74	100KΩ	½	6R6075	BTS-100K	Br.-Blk.-Yl.	" " Decoupling.
75	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl.	Output Grid.
76	150Ω	½	6R3992	BW-½-150	Br.-Grn.-Br.	" Cathode.
77	33KΩ	½	6R6012	BTS-33K	Or.-Or.-Or.	Tone Compensation.
78	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl.	Series Phono.
79	22KΩ	½	6R6028	BTS-22K	Red-Red-Or.	Phono Isolation.
80	27Ω	2	6R3994		Red-Vi.-Blk.	Surge Limiter.
81	180Ω	2	6R3968	BW-2-180	Br.-Gray-Br.	Filter.
82	1000Ω	2	6R476004	BT-2-1000	Br.-Blk.-Red.	"

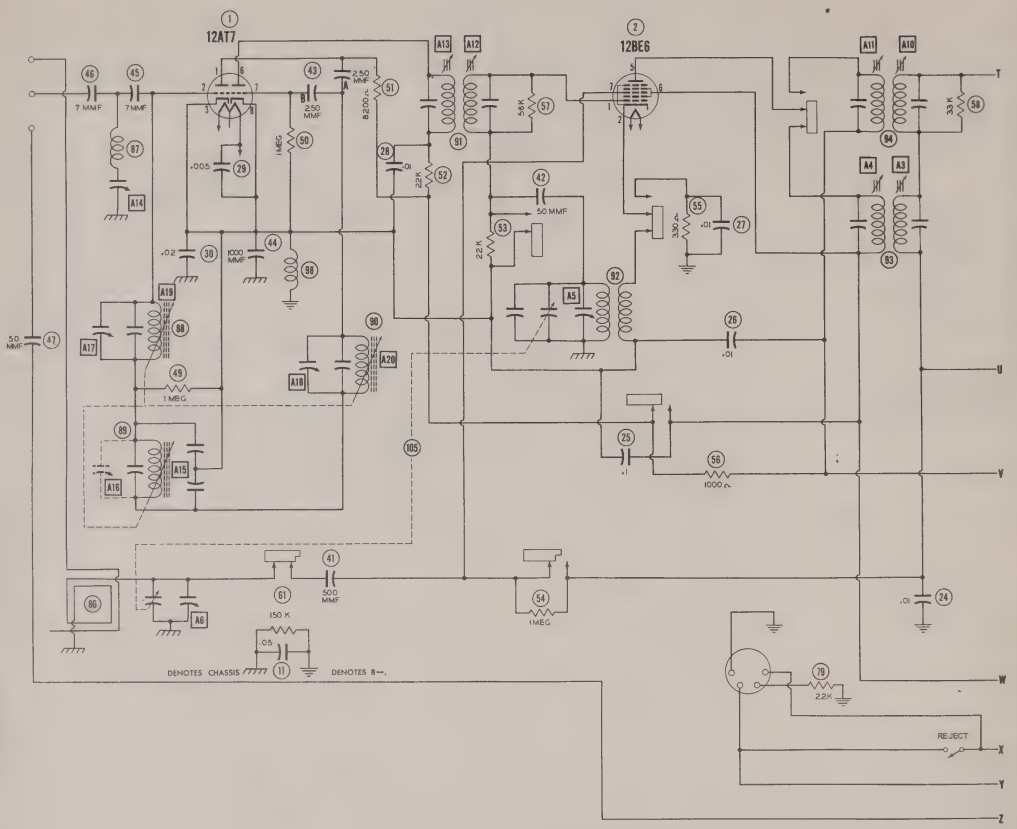
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
83	2000Ω	3.7Ω	190Ω	.4Ω	25K481726			A-2998 #	# Use mounting slots provided.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
84	FIELD	V.C. IMP.	50Q481495	ST-115 Mod. P8-V	8A21	
	PM	3.7Ω				
85	CONE DIA.	V.C. DIA.				
	7 1/4"	3/4"				





IF = 455 KC AM

IF = 4.3 MC FM

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
‡ 1	12AT7	0VDC	-1.4VDC	1VAC	18VAC	31VAC	45VDC	-1.2VDC	.1VDC	28VAC
2A	12BE6	-7.2VDC	0V	31VAC	44VAC	100VDC	100VDC	0V		
‡ 2B	12BE6	.1VDC	2.4VDC	31VAC	44VAC	80VDC	90VDC	0V		
3	12BA6	0V	0V	44VAC	55VAC	93VDC	93VDC	.6VDC		
‡ 4	12BA6	-.2VDC	0V	55VAC	70VAC	70VDC	70VDC	0V		
‡ 5	1S1B	-.5VDC	-1.4VDC	-.7VDC	0V	18VAC	-1VDC	0V	-.4VDC	63VDC
6	6QB5	0V	16.3VDC	117VAC	270VAC	115VDC	100VDC	0V		

‡TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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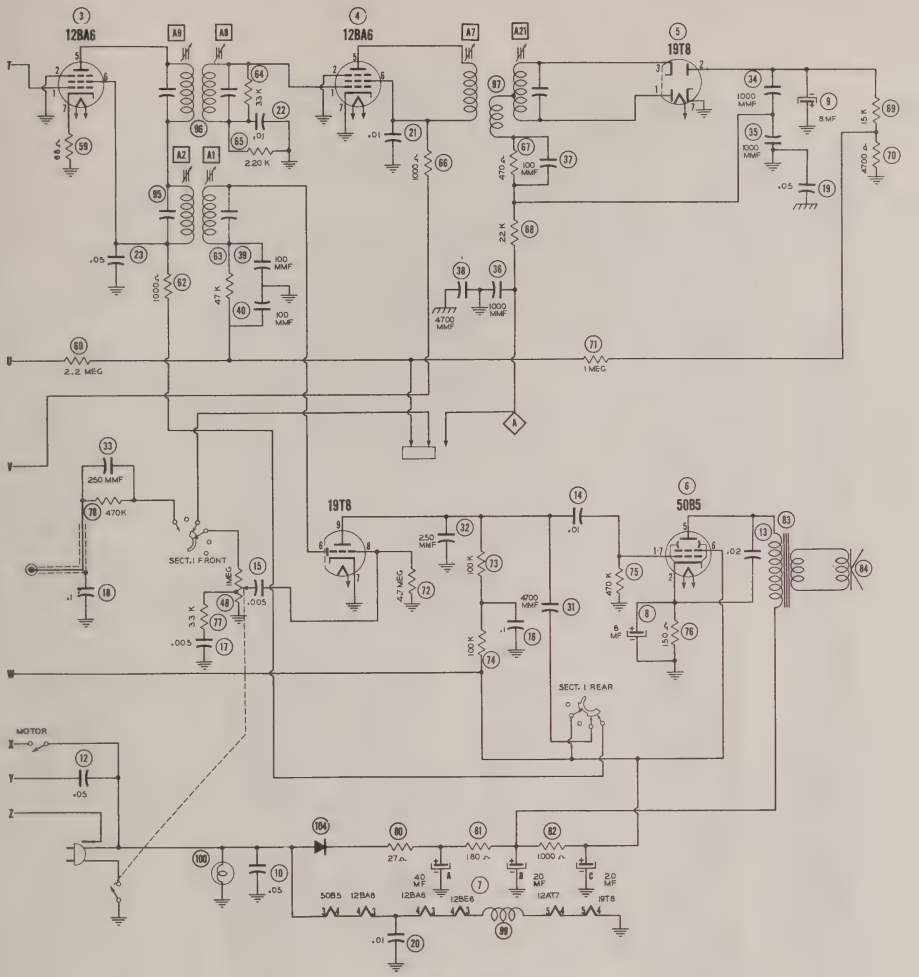

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
‡ 1	12AT7	4MΩ	950KΩ	13Ω	16Ω	26Ω	63KΩ	1 Meg.	13Ω	22Ω
‡ 2A	12BE6	22KΩ	14Ω	26Ω	36Ω	31KΩ	21KΩ	4.2 Meg.		
2B	12BE6	22KΩ	343Ω	26Ω	36Ω	32KΩ	31KΩ	3.9 Meg.		
3	12BA6	3.8 Meg.	0Ω	36Ω	44Ω	32KΩ	32KΩ	68Ω		
‡ 4	12BA6	220KΩ	0Ω	44Ω	50Ω	33KΩ	33KΩ	0Ω		
‡ 5	19T8	1 Meg.	19KΩ	1 Meg.	0Ω	16Ω	1 Meg.	0Ω	4.7 Meg.	230KΩ
6	5085	470KΩ	150Ω	70Ω	50Ω	30KΩ	30KΩ	1470KΩ		

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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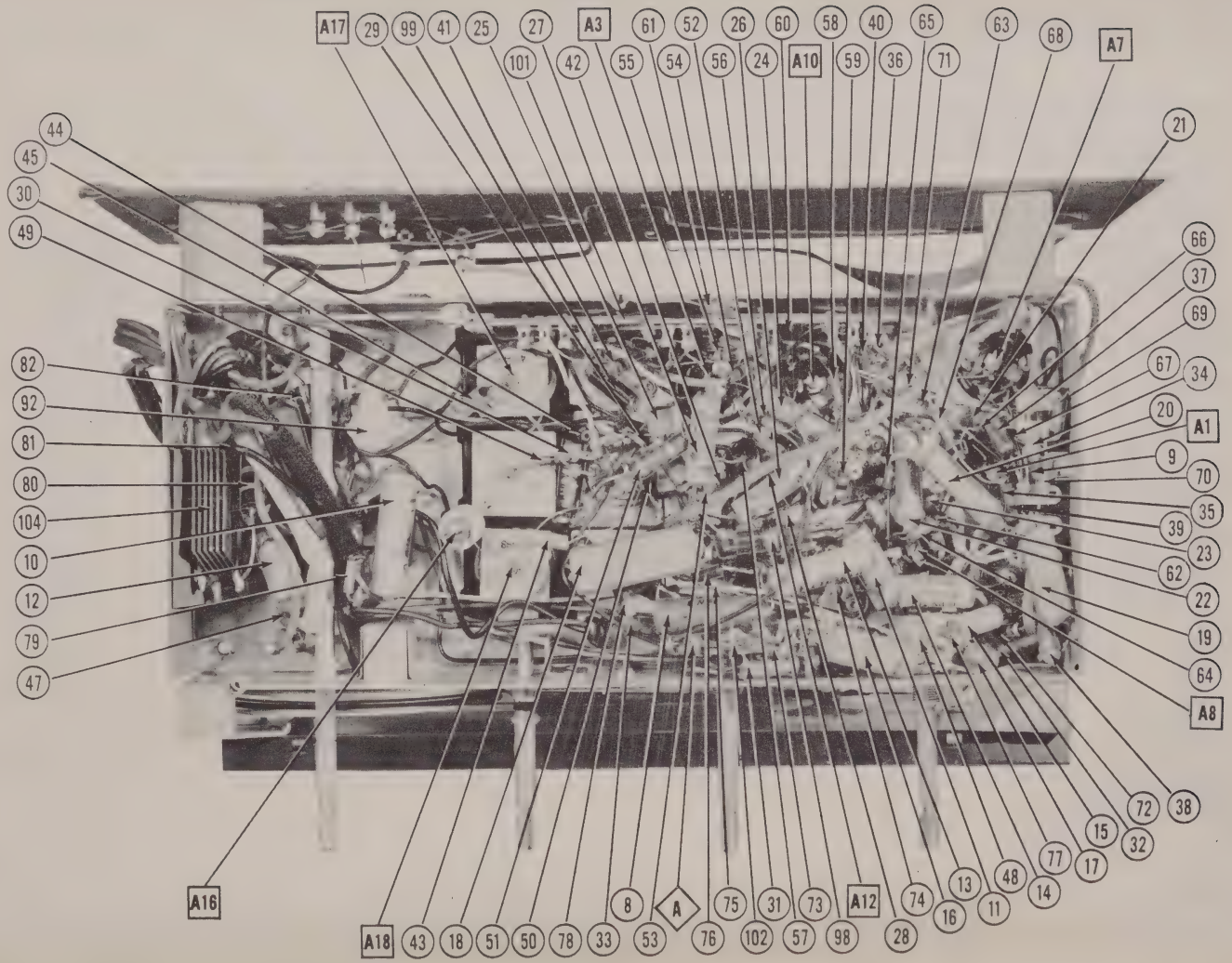
A17
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78
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A18
A16
A12

OLDSMOBILE, MODEL 982399

TRADE NAME Oldsmobile, Model 982399
SUPPLIER Oldsmobile Motors, Div. General Motors, Lansing, Michigan
TYPE SET Battery Operated Custom Built Automotive Superheterodyne Receiver
TUBES (SEVEN) Types 7A7 RF Amp., 7B8 Converter, 7A7 IF Amp., 7E6 DET-AVC-AF, (2) 7C5 Power Output, 0Z4 Rectifier.

POWER SUPPLY 6 Volt Storage Battery RATING 8 Amps. @ 6.3 Volts DC
TUNING RANGE—BROADCAST 550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

In steps 2 thru 6, dummy antenna should be 70MMFD. Use of any other value may result in misalignment.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid) of 7B8. Low side to chassis.	262KC	Tuning slugs fully out	Across Voice Coil	A1, A2 A3, A4	Adjust for maximum output.
2.	70MMFD	High side to Antenna socket. Low side to chassis.	1615KC	Tuning slugs fully out	Across Voice Coil	A5	" " " "
3.	70MMFD	"	1430KC	Tune for maximum output.	"	A6, A7	" " " "
	Follow procedure below if iron core has been replaced.						
4.	70MMFD	High side to Antenna socket. Low side to chassis.	1615KC	Tuning slugs fully out.	Across Voice Coil	A5, A6 A7	Adjust cores A8 and A9 and oscillator core to extend 1 5/32 from end of coil form. Adjust A5, A6 and A7 for maximum output.
5.	70MMFD	High side to Antenna socket. Low side to chassis.	1430KC	Tune for maximum output.	Across Voice Coil	A8, A9	Adjust for maximum output. Repeat steps 4 and 5 until no further improvement can be made.
6.	70MMFD	"	1430KC	"	"	A6, A7	Adjust for maximum output.

With receiver installed in car and antenna fully extended, tune in weak station near 1400KC and adjust A7 for maximum volume.

OLDSMOBILE
MODEL 982399

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PARTS LIST AND DESCRIPTIONS

OLDSMOBILE MODEL 982399

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: OLDSMOBILE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	7A7	7A7	8V	
V2	Converter	7B8	7B8	8X	
V3	IF Amp.	7A7	7A7	8V	
V4	DET-AVC-AF	7E6	7E6	8W	
V5	Power Output	7C5	7C5	6AA	
V6	Power Output	7C5	7C5	6AA	
V7	Rectifier	024	024	4RM	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLDSMOBILE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	400	M908	AF44J4A	UP2245C	DY-20+20/400 +20/25	EL-322	▲Filter
C1B	20	400						■Filter
C1C	20	25						Cathode Bypass
C2	150	500	G151	1468-00015	5W5T15	MO.5-315	1FM-315	Ant. Coupling
C3	.01	400	E103	484-01	GT4S1	ST-4-01	TM-11	AVC Filter
C4	.05	400	E503	484-05	GT4S5	ST-4-05	TM-15	AVC Filter
C5	.001	600	E102	684-001	GT6D1	ST-6-001	TM-21	RF Coupling
C6	27	300	G270	1469-000025	5R5Q25	MO8.5-425	MS-425	Fixed Trimmer Cer.
C7	470	500	G471	1468-0005	5W5T5	MO.5-35	1FM-35	RF Bypass
C8	300	300	7255494	1469-0003	5R5T3	MO8.5-33	MS-33	Fixed Trimmer Cer.
C9	.05	200	E503	484-05	GT2S5	ST-4-05	TM-15	Cathode Bypass
C10	.1	400	E104	484-1	GT4P1	ST-4-1	TM-1	Decoupling
C11	10	500	G100	1468-00001	5W5Q1	MO.5-41	MS-41	IF Coupling
C12	.01	400	E103	484-01	GT4S1	ST-4-01	TM-11	Audio Coupling
C13	.002	600	E202	684-002	GT6D2	ST-6-002	TM-22	Tone Compensation
C14	.005	600	E502	684-005	GT6D5	ST-6-005	TM-25	Tone Compensation
C15	330	500	G331	1468-00035	5W5T3	MO.5-33	1FM-335	AF Plate Bypass
C16	.2	400	E204	484-2	GT4P2	ST-4-2	68-F38	Audio Coupling
C17	.0015	800	7236134	1084-001	GT16D1	STM-16-001	TR-21	Output Plate Bypass
C18	.006	1600	H602	1684-006	GT16D6	STM-16-006	MR-26	Buffer

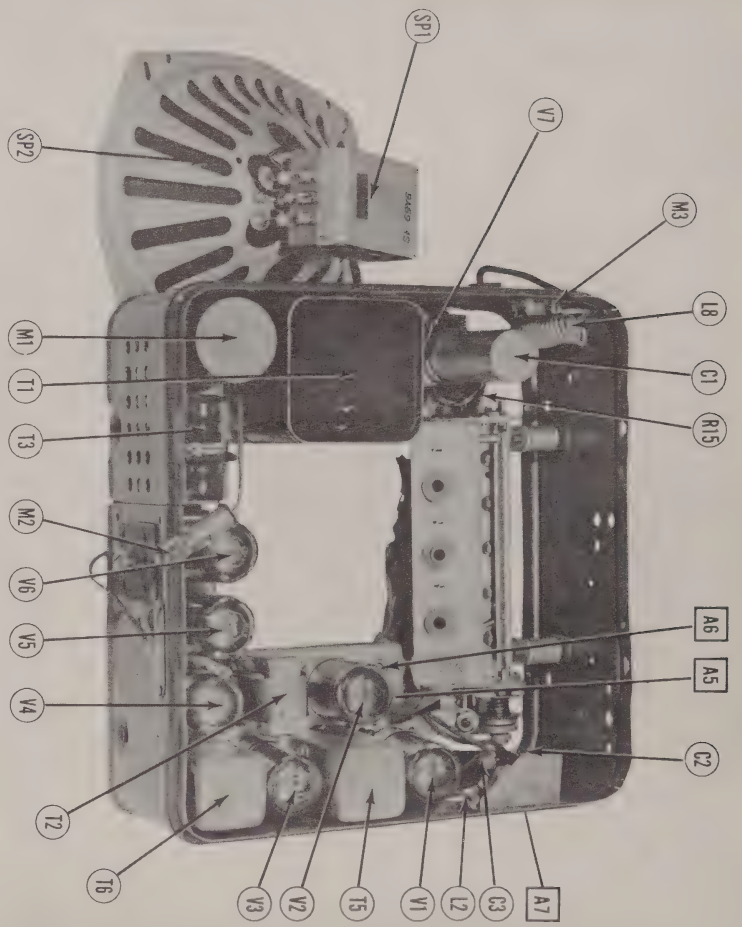
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLDSMOBILE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	300KΩ	½	7255298			Volume control & Switch tapped @ 70KΩ
R1B	500KΩ-Inf.	½				Tone control.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLDSMOBILE PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	220Ω	½	B221	BW-½-220	Red-Red-Br.	RF Cathode
R3	10KΩ	1	B103	BTA-10K	Br.-Blk.-Or.	RF Plate Load
R4	330KΩ	½	A334	BTS-330K	Or.-Or.-Yl.	AVC Network
R5	330KΩ	½	A334	BTS-330K	Or.-Or.-Yl.	AVC Network
R6	56KΩ	½	A563	BTS-56K	Grn.-Blue-Or.	Osc. Grid
R7	15KΩ	2	C153	BT-2-15K	Br.-Grn.-Or.	Screen Dropping
R8	100Ω	½	A101	BW-½-100	Br.-Blk.-Br.	IF Cathode
R9	1 Meg.	½	A105	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network
R10	1 Meg.	½	A105	BTS-1 Meg.	Br.-Blk.-Grn.	Diode Load
R11	1000Ω	½	A102	BTS-1000	Br.-Blk.-Red	AF Cathode
R12	1000Ω	½	A102	BTS-1000	Br.-Blk.-Red	AF Cathode
R13	1 Meg.	½	A105	BTS-1 Meg.	Br.-Blk.-Grn.	AF Grid
R14	1.5 Meg.	½	A155	BTS-1.5 Meg.	Br.-Grn.-Grn.	AF Grid
R15	39KΩ	½	A393	BTS-39K	Or.-White-Or.	Tone Compensation
R16	27KΩ	1	B273	BTA-27K	Red-Vl.-Or.	AF Plate Load
R17	330Ω	1	B131	BW-1-330	Or.-Or.-Br.	Output Cathode
R18	2700Ω	2	C272	BW-2-2700	Red-Vl.-Red	Filter
R19	220Ω	1	B221	BW-1-220	Red-Red-Br.	Hash Suppression

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER VIBRATOR

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	OLDSMOBILE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
T1	6.0VDC @ 3.4A	560VAC .056ADC			7255881	P-4065	T22R20*	

*Drill new mounting holes

TRANSFORMER (INPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		OLDSMOBILE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2				1700Ω CT	7256432			A-2900†	†Bend mounting legs down.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		OLDSMOBILE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T3	6100Ω CT	3.5Ω	430Ω CT	.2Ω	7240453	A-3823‡			‡ Use original frame of transformer or bend down mounting tabs and drill chassis to fit replacement.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			OLDSMOBILE PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V.C.IMP				
SP1	1.7Ω	3.5Ω	7256443			
	CONE DIA.	V.C.DIA				
SP2	6 1/4"x 9"	3/4"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	OLDSMOBILE PART No.	MEISSNER PART No.
L1	Antenna Coil		9Ω	7255408	
L2	Antenna Choke Coil		4Ω	7240251	
L3	RF Coil		9Ω	7255408	
L4	Osc. Coil	3.5Ω	4Ω	7255297	
L5	Input IF	44Ω	46Ω	7242079	16-6652
L6	Output IF	30Ω		7242533	
L7	Hash Choke		0Ω	7241708	
L8	Spark Choke		0Ω	7241701	

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				OLDSMOBILE PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Interrupter	6.0 VDC	115~	8638	C35	5335	

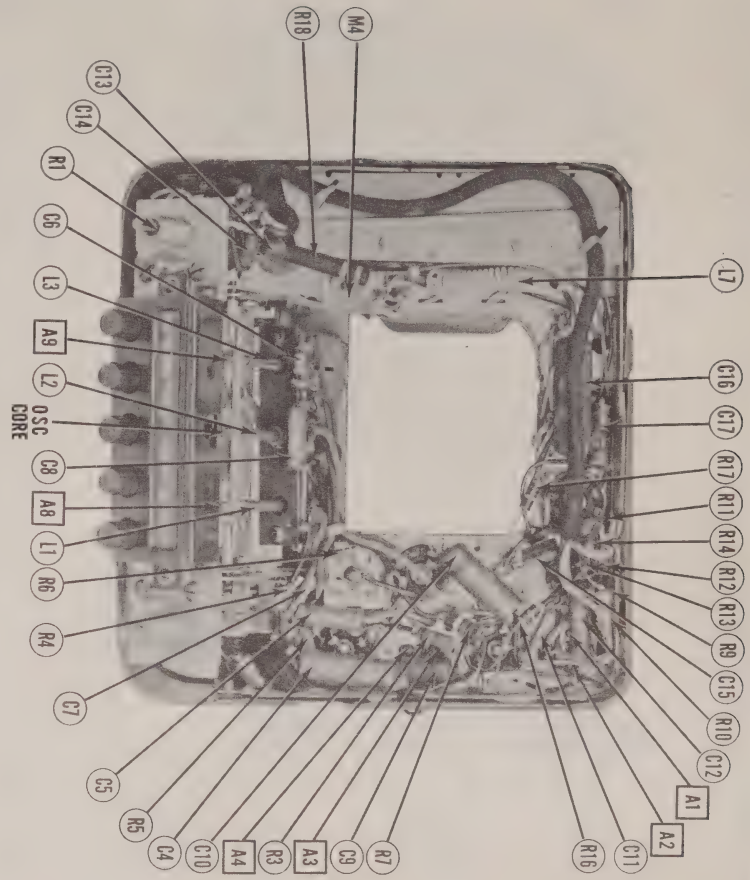
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					OLDSMOBILE PART No.		
M2	Bayonet	6-8V	0.25A	Blue	187189		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	OLDSMOBILE PART No.	NOTES
M3	Spark Plate	7241259	
M4	Spark Plate	7241259	
A5	Trimmer Strip	7242322	Osc. Adjustment
A6			RF Adjustment
A7	Trimmer	7255662	Antenna Adjustment
	Pointer Assby.	7255451	
	Dial Glass	7255275	

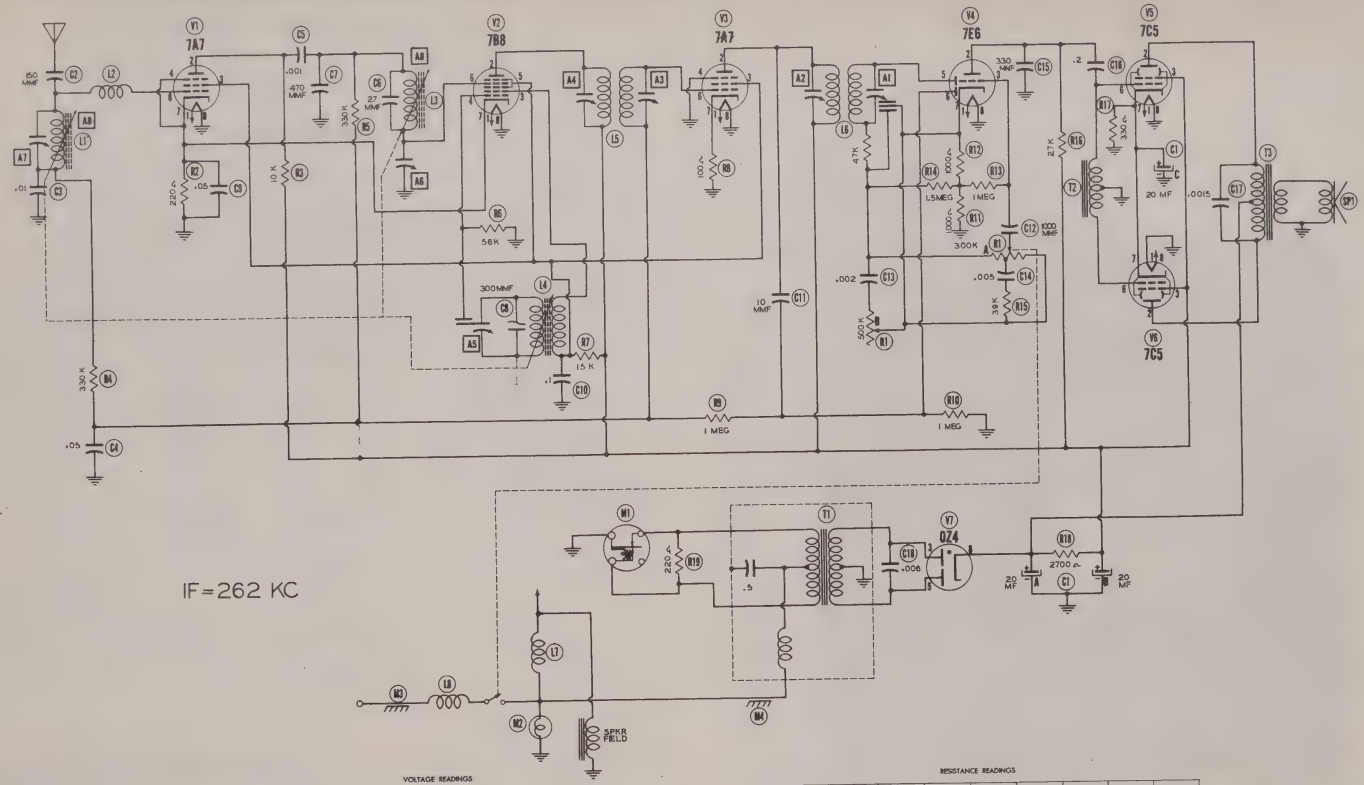
CHASSIS—BOTTOM VIEW



DATE 4/49 497-14 SET #59 FOLDER #14

OLDSMOBILE MODEL 982399

OLDSMOBILE MODEL 982399



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	7A7	0V	180VDC	73VDC	3VDC	0V	0V	3VDC	6VDC
V2	7B8	0V	190VDC	73VDC	1-6VDC	73VDC	0V	3VDC	6VDC
V3	7A7	6VDC	190VDC	73VDC	0V	0V	0V	1.2VDC	0V
V4	7E6	0V	100VDC	.4VDC	6VDC	0V	2.2VDC	6VDC	6VDC
V5	7C5	0V	250VDC	185VDC	0V	3VDC	0V	12VDC	6VDC
V6	7C5	0V	250VDC	185VDC	0V	0V	0V	12VDC	6VDC
V7	0Z4	0V	0V		295VAC	0V	295VAC	0V	260VDC

TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	7A7	0Ω	*15KΩ	*17KΩ	220Ω	0Ω	2.5 Meg.	220Ω	.5Ω
V2	7B8	0Ω	*2.7KΩ	*17KΩ	54KΩ	*17KΩ	2.5 Meg.	220Ω	.5Ω
V3	7A7	.5Ω	*2.7KΩ	*17KΩ	0Ω	0Ω	2 Meg.	100Ω	0Ω
V4	7E6	0Ω	*31KΩ	1 Meg.	2KΩ	1 Meg.	300KΩ	2KΩ	.5Ω
V5	7C5	0Ω	*210Ω	*2.7KΩ	Inf.	1KΩ	800Ω	340Ω	.5Ω
V6	7C5	0Ω	*240Ω	*2.7KΩ	Inf.	Inf.	900Ω	340Ω	.5Ω
V7	0Z4	0Ω	Inf.	300Ω	Inf.	270Ω	Inf.	Inf.	440KΩ

* Measured from pin 8 of 0Z4

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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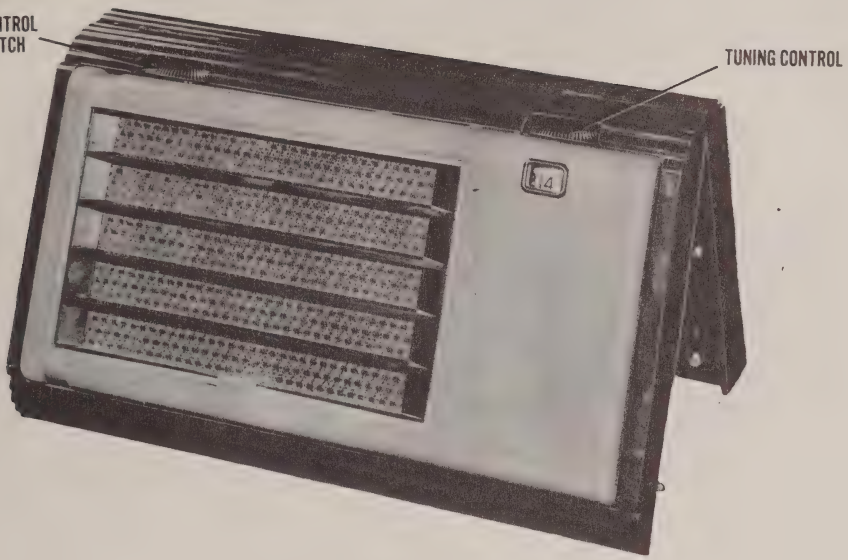
497-14

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



PHILCO
MODEL 49-603

PHILCO MODEL 49-603

TRADE NAME	Philco, Model 49-603
MANUFACTURER	Philco Corp., Tioga and "C" Sts., Philadelphia, Pa.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna.
TUBES FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 DET-AVC-AF, 50B5 Power Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-DC RATING .27Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	Across Loop Antenna	455KC	Tuning Cap fully closed	Across Voice Coil	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2.		Loop	1600KC	1600KC	Across Voice Coil	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust of maximum output..
3.		Loop	1500KC	Tune for maximum output.	Across Voice Coil	A6	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

PHILCO MODEL 49-603

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	DET-AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50B5	50B5	7BZ	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	150	30-2573	AF844P	UP43215	DY-403020-150	EL-224	Filter
C1B	25	150						Filter
C1C	20	150						Filter
C2	220		30-1224-1	1468-0002	5W5T2	MO.5-32	1FM-32	RF Coupling Cer.
C3	47		30-1224-2	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap Cer.
C4	10		30-1224-26	1469-00001	5W5Q1	MO.5-41	1FM-41	Fixed Trimmer Cer.
C5	.047	200	61-0179	P288-047	GT2S5	ST-4-05	TM-15	Decoupling
C6	.1	400	30-4644-1				72P2	Line Isolation
C7	.047	200	61-0179	P288-047	GT2S5	ST-4-05	TM-15	AVC Filter
C8	.01	400	61-0120	P488-01	GT4S1	ST-4-01	TM-11	Audio Coupling
C9	.01	400	61-0120	P488-01	GT4S1	ST-4-01	TM-11	Audio Coupling
C10	220		30-1224-20	1468-0002	5W5T2	MO.5-32	1FM-32	RF Bypass Cer.
C11	.022	400	61-0108	P488-022	GT4S2	ST-4-02	TM-12	Output Plate Bypass
C12	.047	400	61-0179	P488-047	GT4S5	ST-4-05	TM-15	Line Filter

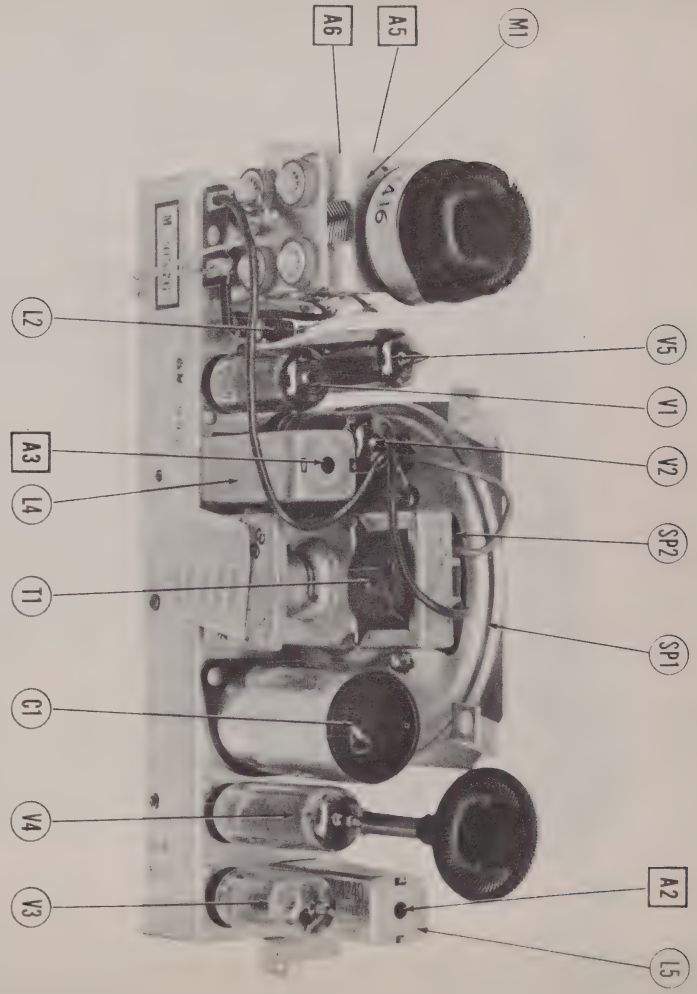
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	500KΩ	½	49-4503340			Volume Control and Switch.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network
R3	22KΩ	½	66-3223340	BTS-22K	Red-Red-Or.	Osc. Grid
R4	220Ω	½	66-1223340	BW-½-220	Red-Red-Br.	IF Cathode
R5	6800Ω	½	66-2863340	BTS-6800	Blue-Gray-Red	Screen Dropping
R6	47K	½	66-3473340	BTS-47K	Yl.-Vl.-Or.	Diode RF Filter
R7	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network
R8	3.3 Meg.	½	66-5333340	BTS-3.3 Meg.	Or.-Or.-Grn.	AF Grid
R9	470KΩ	½	66-4473340	BTS-470K	Yl.-Vl.-Yl.	AF Plate
R10	470KΩ	½	66-4473340	BTS-470K	Yl.-Vl.-Yl.	Output Grid
R11	130Ω	1	66-1123340	BW-1-150	Br.-Or.-Br.	Output Cathode
R12	1200Ω	1	66-2123340	BTA-1200	Br.-Red-Red	Filter
R13	220Ω	½	66-1224340	BW-½-220	Red-Red-Br.	Filter
R14	150K	½	66-4153340	BTS-150K	Br.-Grn.-Yl.	Line Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: PHILCO PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V.C.IMP				
SP1	PM	3.3Ω	36-1627-4		5A07	
	CONE DIA	V.C.DIA				
SP2	3 15/16"	9/16"				

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
T1	2200Ω	3.3Ω	220Ω	.8Ω	Part of 36-1627-4			A-3025	

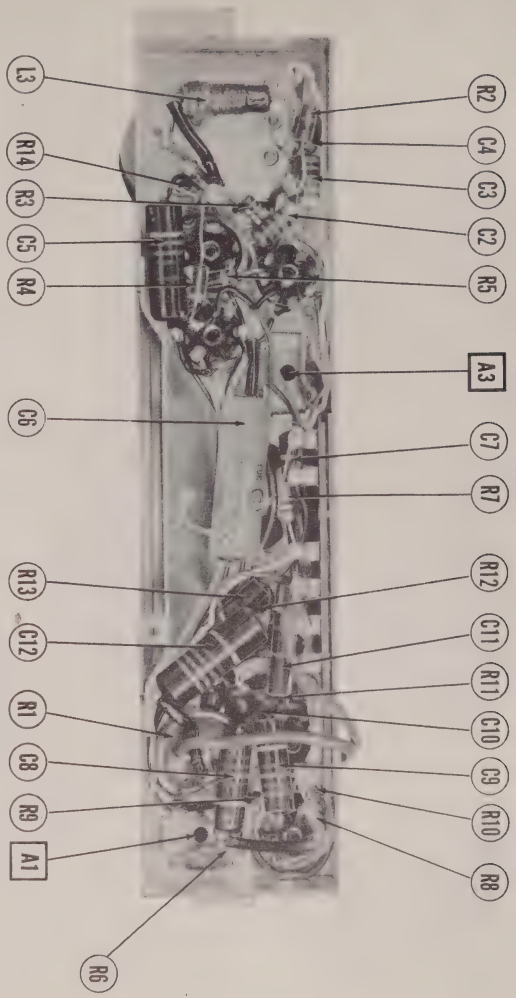
R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	MEISSNER PART No.
L1	Loop Ant.	3Ω		32-4325	
L2	Loop Loading Coil	8Ω		32-4007-2	
L3	Osc. Coil	1Ω	8Ω	32-4326	
L4	Input IF	20Ω	20Ω	32-4160-6	16-6678
L5	Output IF	16Ω	16Ω	32-4240	

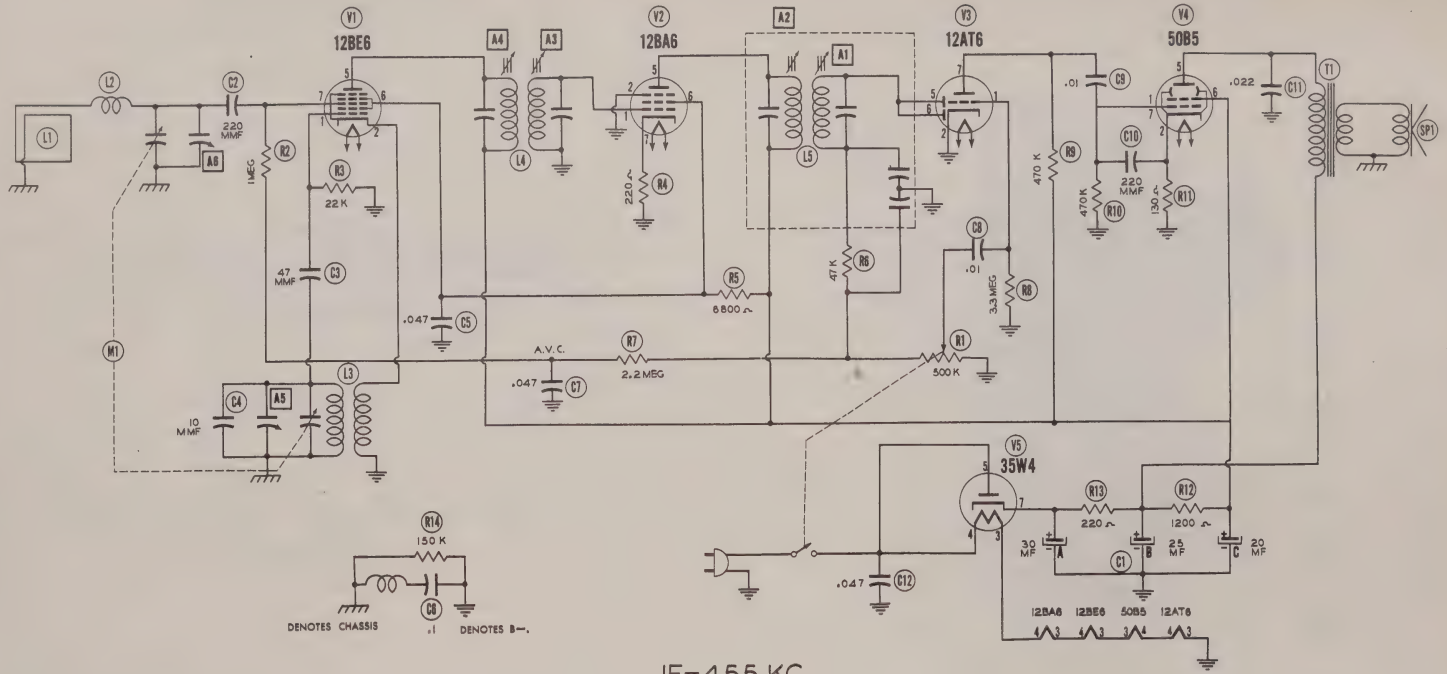
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M1	2 Gang Var. Cap. Cabinet	31-2735 76-4355	(19-395MTF, 15-145MTF)

CHASSIS—BOTTOM VIEW



PHILCO MODEL 49-6003



IF=455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	§-4.8VDC	0V	58VAC	70VAC	115VDC	65VDC	-.4VDC
2	12BA6	0V	0V	70VAC	82VAC	115VDC	65VDC	1.4VDC
3	12AT6	-.2VDC	0V	0V	12VAC	-.5VDC	-.5VDC	55VDC
4	50B5	0V	6.9VDC	58VAC	12VAC	110VDC	115VDC	0V
5	35W4	115VDC	0Ω	82VAC	117VAC	117VAC	110VAC	135VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	22KΩ	1.2Ω	60Ω	75Ω	*520Ω	*8KΩ	3.7 Meg.
2	12BA6	22Ω	0Ω	75Ω	85Ω	*520Ω	*8KΩ	220Ω
3	12AT6	3.3 Meg.	0Ω	0Ω	13Ω	550KΩ	550KΩ	*470KΩ
4	50B5	470KΩ	130Ω	60Ω	13Ω	*490Ω	1400Ω*	470KΩ
5	35W4	80KΩ	Inf.	85Ω	115Ω	115Ω	110Ω	80KΩ

* MEASURED FROM PIN 7 OF TUBE 5

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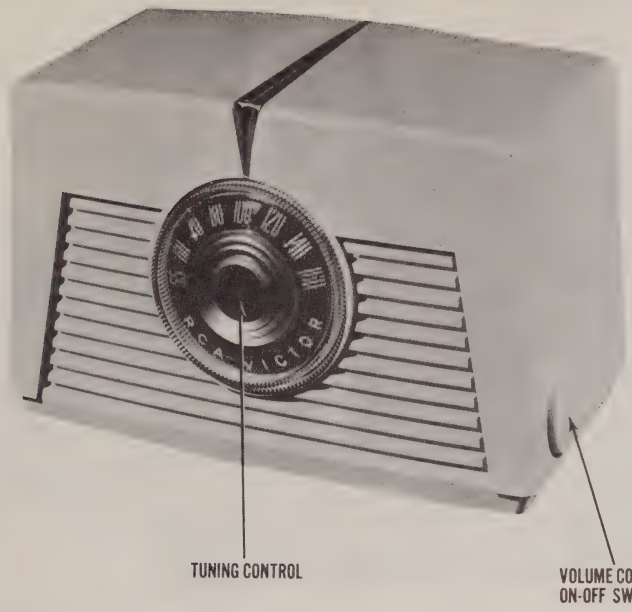
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



RCA VICTOR MODEL 8X542

TRADE NAME	RCA Victor, Models 8X541, 8X542, 8X547 (Ch. RC-1065, RC-1065A).
MANUFACTURER	RCA Victor Div., Radio Corp.,of America, Camden, New Jersey
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna.
TUBES (FIVE)	Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC.
RATING	.26 Amp. @ 117 Volts AC.
TUNING RANGE--BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to pin 4(Grid)12SK7 (V2) Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum mod.
2	.1 MFD	High side to rear stator of tuning cap.	455KC	"	"	A3,A4	Adjust for maximum output.
3		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	1400KC	Tune for maximum output.	"	A6	Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Adjust for maximum output.
5		"	600KC	600KC	"	A7	Rock tuning cap. and adjust for maximum output.

RCA VICTOR
MODELS 8X541, 8X542, 8X547

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DATE 4/49 497-16 SET #59 FOLDER 16

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amp.	12SK7	12SK7	8N	
V3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	150	73500	PRSA150/30-50	EDL5315	DSB-5030-150	TA-530	Filter Green.
C1B	50	150					" Red.	
C2	56		73499	1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid cap. Cer.
C3	.05	400	70615	P488-05	GT4S5	ST-4-05	TM-15	AVC Filter.
C4	.005	400	70606	P688-005	GT6S5	ST-6-005	TM-25	AVC Filter.
C5	.02	400	70611	P488-02	GT4S2	ST-4-02	TM-12	Audio Coupling.
C6	150		73501	1468-00015	5W5T15	MO.5-315	1FM-315	Tone Comp. Cer.
C7	330	500	72571	1468-0003	5W5T3	MO.5-33	1FM-33	AF Plate Bypass.
C8	.002	400	70601	P688-002	GT6D2	ST-6-002	TM-22	Audio Coupling.
C9	.03	400	70613	P488-03	GT4S3	ST-6-03	TM-13	Output Plate Bypass.
C10	.05	400	70615	P488-05	GT4S5	ST-4-05	TM-15	Rect. Plate Bypass.
C11	.1	400	70617	P488-1	GT4P1	ST-4-1	72P2	Line Isolation.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	38410	D13-133 #	M-60-Z #	Volume Control.
R1B	Shaft		Not. Req.	A	Not. Req.	Attach to R1A per instructions.
R1C	Switch		" "	41	SW-A	" " "

Install a 47KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control.(Controls viewed from shaft side, terminals down).

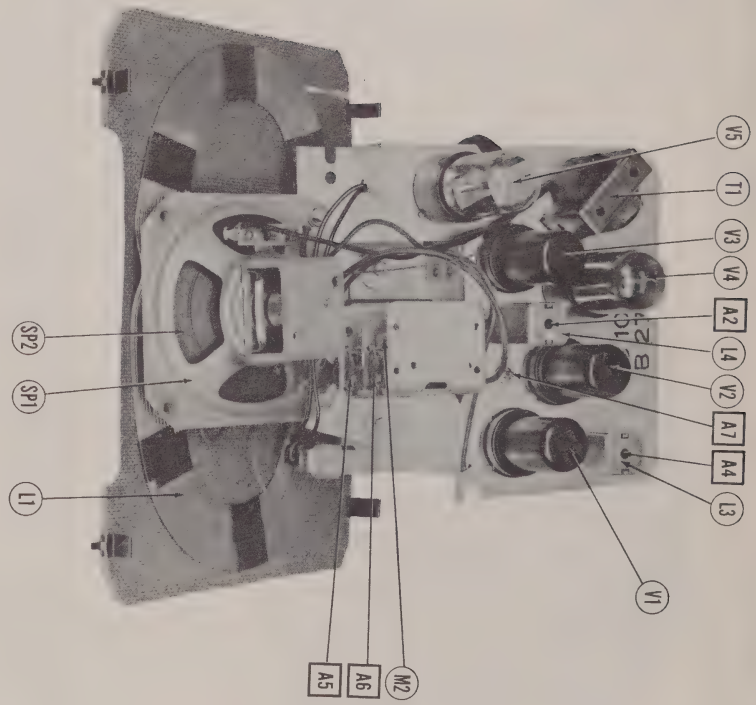
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	22KΩ	½		BTS-22K	Red-Red-Or.	Oscillator Grid.
R3	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network.
R4	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn.	AVC Network.
R5	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn.	AF Grid.
R6	220KΩ	½		BTS-220K	Red-Red-Yl.	AF Plate.
R7	470KΩ	½		BTS-470K	Yl.-Vi.-Yl.	Output Grid.
R8	150Ω	½		BW-½-150	Br.-Grn.-Br.	" Cathode.
R9	1200Ω	1		BTA-1200	Br.-Red-Red.	Filter.
R10	220KΩ	½		BTS-220K	Red-Red-Yl.	Line Isolation.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: RCA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
T1	2KΩ	3.4Ω	230Ω tap @ 12Ω	.9Ω	71111	A-3330			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA RCA PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
SP1	FIELD PM 3.4Ω	V.C. IMP.	73919	ST-113 MOD. P4-X	4A07	
SP2	CONE DIA. 3 7/8"	V.C. DIA. 9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA PART No.	REPLACEMENT DATA MEISSNER PART No.	
L1A	Loop Ant.	1Ω		73487		Models 8X542, 8X547.
L1B	" "			73486		Model 8X541.
L2	Osc. Coil.	.8Ω	5Ω	70133		
L3	Input IF	11Ω	12	73036	16-6678	
L4	Output IF	15Ω	15Ω	73037		

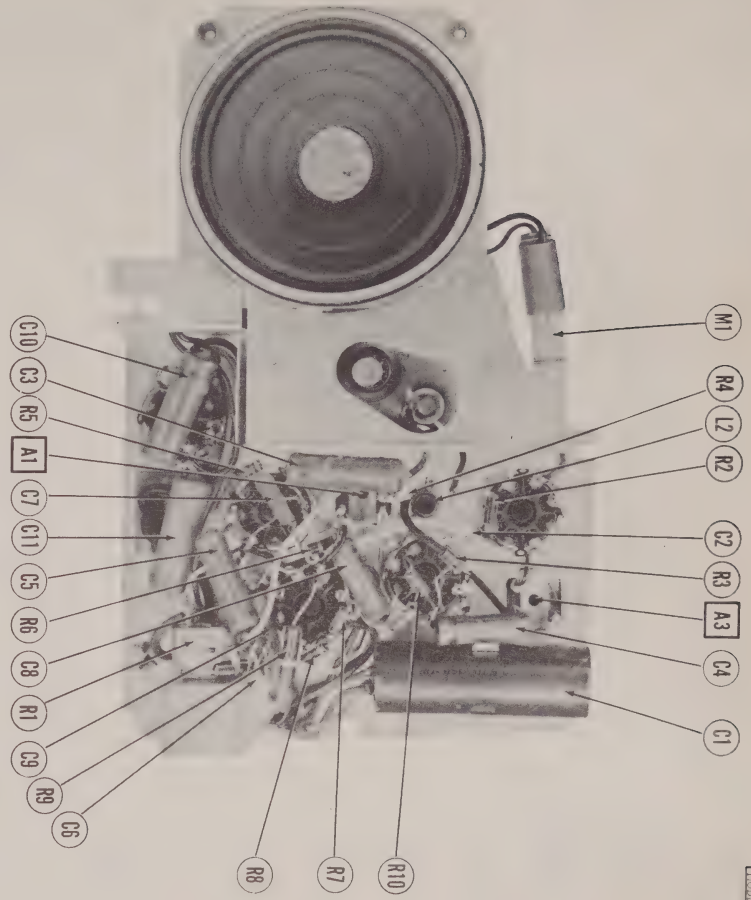
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA RCA PART No.		INSTALLATION NOTES
M1	Bayonet	6-8V	0.15A	Brown	31480		Type # 47

MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
M2	2 Gang Var.Cap.	73485	(28-417 MMF, 16-125 MMF)
	Dial Knob	73489	
	Knob	73490	Model 8X541
	Knob	73491	" 8X542
	Knob	74007	" 8X547
	Cabinet	Y1495	" 8X541
	Cabinet	Y1496	" 8X542
	Cabinet	Y2053	" 8X547

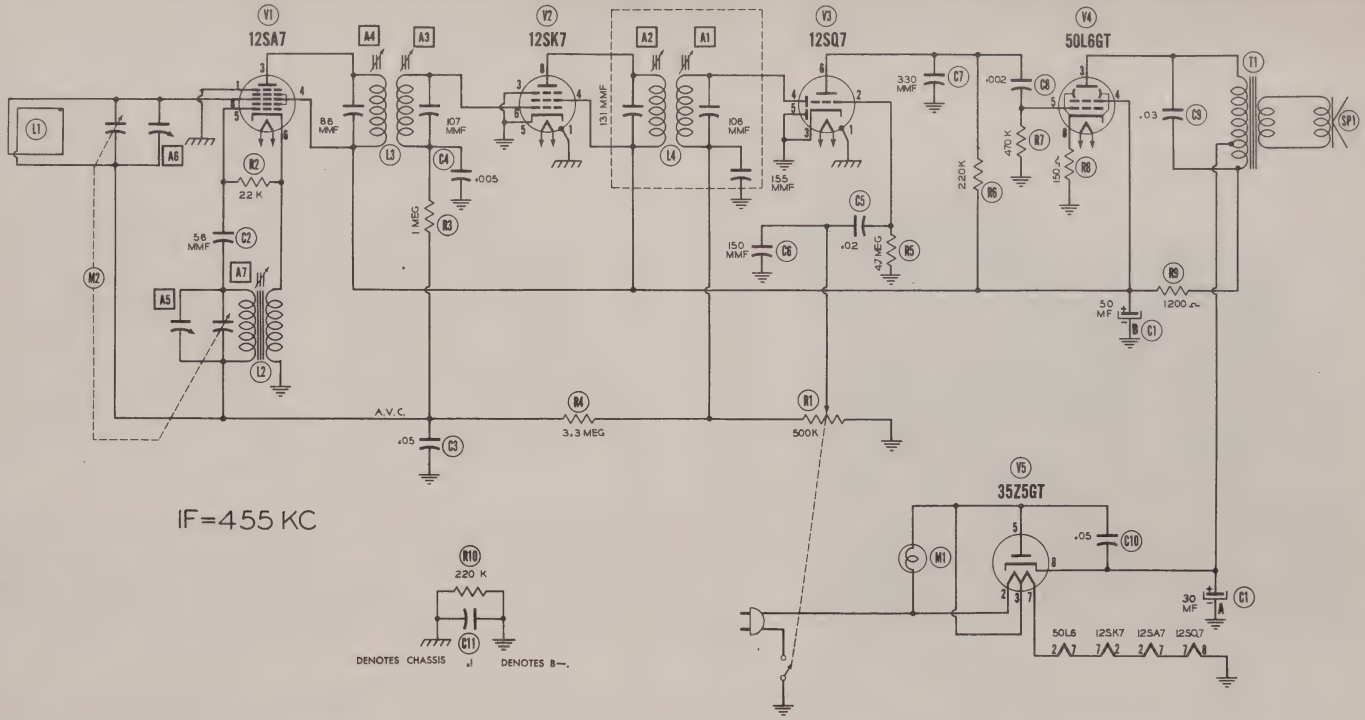
CHASSIS—BOTTOM VIEW



RCA VICTOR MODEL 8X541

RCA VICTOR MODEL 8X541

DATE 4/49 497-16 SET #59 FOLDER 16.



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	12SA7	0V	24VAC	90VDC	90VDC	5-11VDC	0V	12VAC	-.3VDC
V2	12SK7	0V	24VAC	0V	-.4VDC	0V	90VDC	38VAC	90VDC
V3	12SQ7	0V	-.7VDC	0V	-.4VDC	0V	60VDC	12VAC	0V
V4	50L6GT	0V	85VAC	115VDC	90VDC	0V	0V	38VAC	5.8VDC
V5	35Z5GT	0V	117VAC	115VAC	0V	115VAC	0V	85VDC	122VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	12SA7	220KΩ	24Ω	*1200Ω	*1200Ω	25KΩ	.8Ω	12Ω	3.3 Meg.
V2	12SK7	220KΩ	24Ω	0Ω	4 Meg.	0Ω	*1200Ω	38Ω	*1200Ω
V3	12SQ7	220KΩ	4.7 Meg.	0Ω	500KΩ	0Ω	*220KΩ	12Ω	0Ω
V4	50L6GT	Inf.	85Ω	*210Ω	*1200Ω	470KΩ	0Ω	38Ω	150Ω
V5	35Z5GT	Inf.	115Ω	110Ω	Inf.	110Ω	Inf.	85Ω	65KΩ

* MEASURED FROM PIN 8 OF V5

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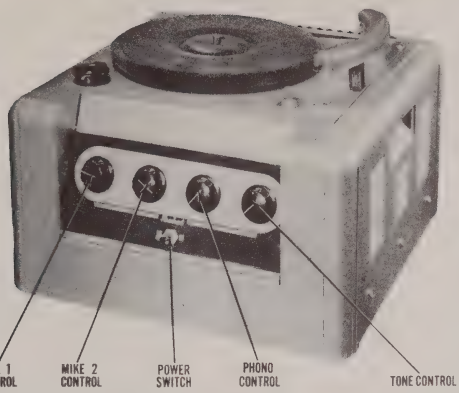
497-16

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



RAULAND MODEL 1821

TRADE NAME Rauland, Models 1821, 1822
MANUFACTURER Rauland Corp., 4245 N. Knox Ave., Chicago 41, Illinois
TYPE SET AC or Battery Operated Mobile Audio Amplifier with Phono Player
TUBES (EIGHT) Types 6SF5 1st Mic. Pre. Amp., 6SF5 2nd Mic. Pre. Amp., 6SF5 Mixer, 6SN7GT AF-Phase Inv., (2) 6L6 Power Output, (2) 6X5GT Rectifier

POWER SUPPLY 110-125 Volts AC or 6 Volt Storage Battery
RATING .87 Amp. @ 117 Volts AC or 15 Amp. @ 6 Volts DC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SF5	0V	1.8VDC	0V	0V	180VDC	290VDC	3.2VAC	3.2VAC
2	6SF5	0V	1.8VDC	0V	0V	180VDC	290VDC	3.2VAC	3.2VAC
3	6SF5	0V	1.8VDC	0V	290VDC	180VDC	0V	3.2VAC	3.2VAC
4	6SN7GT	0V	100VDC	4.2VDC	0V	100VDC	4.2VDC	3.2VAC	3.2VAC
5	6L6	0V	3.2VAC	375VDC	320VDC	0V	0V	3.2VAC	24.5VDC
6	6L6	0V	3.2VAC	375VDC	320VDC	0V	0V	3.2VAC	24.5VDC
7	6X5GT	0V	3.2VAC	340VAC	0V	340VAC	0V	3.2VAC	380VDC
8	6X5GT	0V	3.2VAC	340VAC	0V	340VAC	0V	3.2VAC	380VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SF5	0Ω	3.3KΩ	2.2 Meg.	Inf.	370KΩ	140KΩ	.05Ω	.05Ω
2	6SF5	0Ω	3.3KΩ	2.2 Meg.	Inf.	370KΩ	140KΩ	.05Ω	.05Ω
3	6SF5	0Ω	3.3KΩ	150KΩ	420KΩ	370KΩ	10Ω	.05Ω	.05Ω
4	6SN7GT	500KΩ	240KΩ	1KΩ	6.8KΩ	240KΩ	1KΩ	.05Ω	.05Ω
5	6L6	0Ω	.05Ω	130KΩ	135KΩ	100KΩ	Inf.	.05Ω	200Ω
6	6L6	0Ω	.05Ω	130KΩ	135KΩ	100KΩ	0Ω	.05Ω	200Ω
7	6X5GT	Inf.	.05Ω	130KΩ	Inf.	130Ω	Inf.	.05Ω	130KΩ
8	6X5GT	Inf.	.05Ω	120Ω	Inf.	120Ω	Inf.	.05Ω	130KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connecter.

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DATE 4/49 497-17 SET #59 FOLDER 17

RAULAND
MODELS 1821, 1822

PARTS LIST AND DESCRIPTIONS

RAULAND MODEL 1921

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RAULAND PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1.	Mic.#1 Pre. Amp.	6SF5	6SF5	6AB	
2.	Mic.#2 Pre. Amp.	6SF5	6SF5	6AB	
3.	Mixer	6SF5	6SF5	6AB	
4.	AF-Phase Inv.	6SN7GT	6SN7GT	8BD	
5.	Power Output	6L6	6L6	7AC	
6.	Power Output	6L6	6L6	7AC	
7.	Rectifier	6X5GT	6X5GT	6S	
8.	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RAULAND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	40	450	CE-706A	AF2222J*	UP11114*	DY-4X10-450*	EL-410*	Filter ◓
9B	10	450		PRS450/30	BR3045	M-30-450	UT-30	Filter ■
9C	10	450						Decoupling ▲
9D	10	450						Decoupling
10	40	25		PRS25/50	BR502	M-50-25	TA-50	Cathode Bypass
11	40	25		PR25/50	BR502	M-50-25	TA-50	" "
12A	40	25		FRS150/40-40	BRD4415	DSB2X40-150	TA-440	" "
12B	40	25						" "
13	.5	400		430T- 5	DYR6050	XDMR6- 5	BP-50	Line Bypass
14	.3	150		609- 3	Tc030	XLXPL-6-4	UC-46	Phono Motor Bypass
15	.5	200		484- 5	GT2P5	ST-2-5	TC-5	Hash Filter
16	.5	200		484- 5	GT2P5	ST-2-5	TC-5	" "
17	.5	200		484- 5	GT2P5	ST-2-5	TC-5	" "
18	.05	600		684-05	GT6S5	ST-6-15	TC-15	Audio Coupling
19	.05	600		684-05	GT6S5	ST-6-15	TC-15	" "
20	.05	600		684-05	GT6S5	ST-6-15	TC-15	" "
21	.05	600		684-05	GT6S5	ST-6-15	TC-15	Tone Compensation
22	.02	600		684-02	GT6S2	ST-6-12	TC-12	Audio Coupling
23	.02	600		684-02	GT6S2	ST-6-12	TC-12	" "
24	200	600		1468-0002	SW5T2	MO.5-32	1FM-32	Tone Compensation
25	200	600		1468-0002	SW5T2	MO.5-32	1FM-32	" "
26	100	600		1468-0001	SW5T1	Mo.5-31	1FM-31	" "

* Parallel sections to obtain desired capacity.

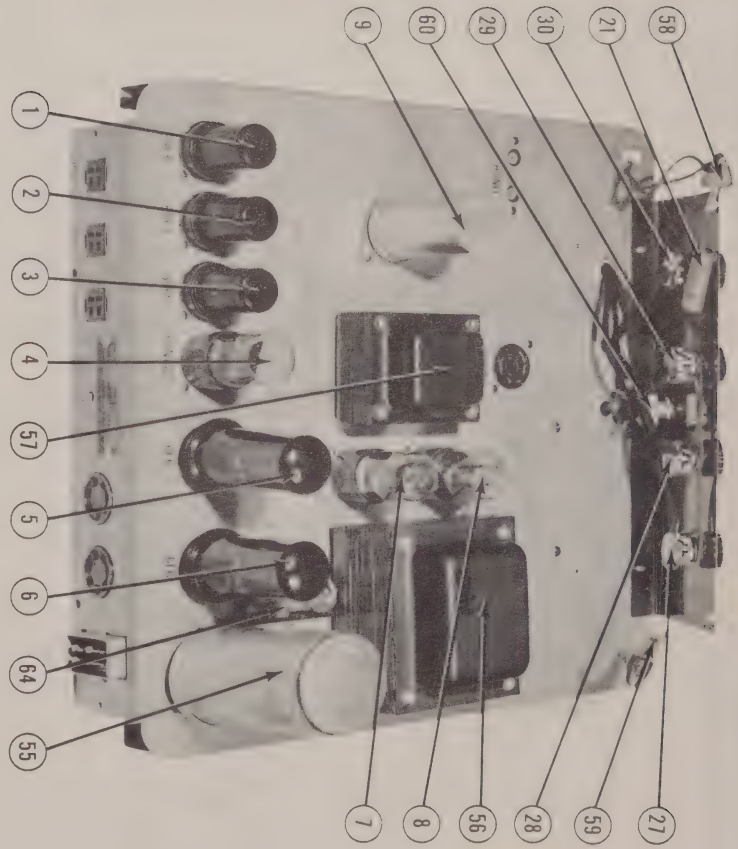
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RAULAND PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
27A	500KΩ	½	RP-504-B	D13-133	AM-60-Z	Mike 1 control
B	Shaft		Not Req.	E	KSS-3	Attach to 27A Per Instructions
28A	500KΩ	½	RP-504B	D13-133	AM-60-Z	Mike 2 control
B	Shaft		Not Req.	E	KSS-3	Attach to 28A Per Instructions
29A	500KΩ	½	RP-504B	D13-133	AM-60-Z	Phono control
B	Shaft		Not Req.	E	KSS-3	Attach to 29A Per Instructions
30A	500KΩ	½	RP-504B	D13-133	AM-60-Z	Tone control
B	Shaft		Not Req.	E	KSS-3	Attach to 30A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RAULAND PART No.	IRC PART No.	IDENTIFICATION CODES
31	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn 1st Mic. Amp. Grid
32	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. 2nd " " "
33	3300Ω	½		BTS-3300	Or.-Or.-Red 1st " " Cathode
34	3300Ω	½		BTS-3300	Or.-Or.-Red 2nd " " "
35	220KΩ	½		BTS-220K	Red-Red-Yl. 1st " " Plate Load
36	220KΩ	½		BTS-220K	Red-Red-Yl. 2nd " " "
37	220KΩ	½		BTS-220K	Red-Red-Yl. Isolation
38	220KΩ	½		BTS-220K	Red-Red-Yl. "
39	470K	½		BTS-470K	Yl.-Vi.-Yl. "
40	3300Ω	½		BTS-3300	Or.-Or.-Red Mixer Cathode
41	10Ω	½		BW-½-10	Br.-Blk.-Blk. " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	RAULAND PART No.	IRC PART No.		
42	220KΩ	½		BTS-220K	Red-Red-Yl.	Mixer Plate Load
43	4700Ω	½		BTS-4700	Yl.-Vi.-Red	Decoupling
44	1000Ω	½		BTS-1000	Br.-Blk.-Red	1st AF Cathode
45	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	" " Plate Load
46	6800Ω	½		BTS-6800	Blue-Gray-Red	Phase Inv. Grid
47	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	" " Plate Load
48	3300Ω	½		BTS-3300	Or.-Or.-Red	Decoupling
49	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Output Grid
50	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	" "
51	200Ω	10		AB-200		" Cathode
52	3300Ω	½		BTS-3300	Or.-Or.-Red	Feedback
53	5000Ω	10		AB-5000		Filter
54	100Ω	1		BW-1-100	Br.-Blk.-Br.	Hash Suppression

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				RAULAND PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
55	Int.	6.3 VDC	60∿	JV-0001			

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	RAULAND PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
56	117VAC @ .87A or 6.3VDC @ 8.2A	680VCT .125ADC	6.4VCT @ 4.75A		LP-0073			P-3176#

Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RAULAND PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
57	6000Ω CT	500Ω 250Ω 16Ω 8Ω 4Ω	140Ω CT	11.6Ω 7.5Ω .4Ω .3Ω .2Ω	LO-0104			A-3131#	# Drill new mounting holes.

DIAL LIGHTS

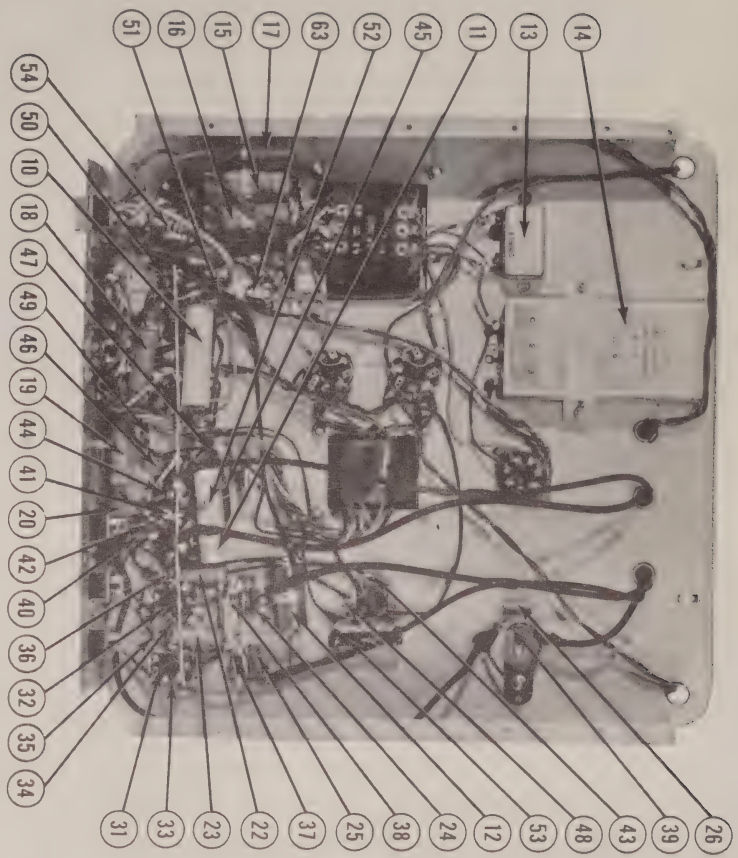
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					RAULAND PART No.		
58	Bayonet	6-8V	0.25A	Blue			Type #44
59	Bayonet	6-8V	0.25A	Blue			Type #44

MISCELLANEOUS

ITEM No.	PART NAME	RAULAND PART No.	NOTES
60	Switch		Power
61	Switch		Standby
62	Switch		Motor
63	Fuse		2 Amp.
64	Fuse		20 Amp.

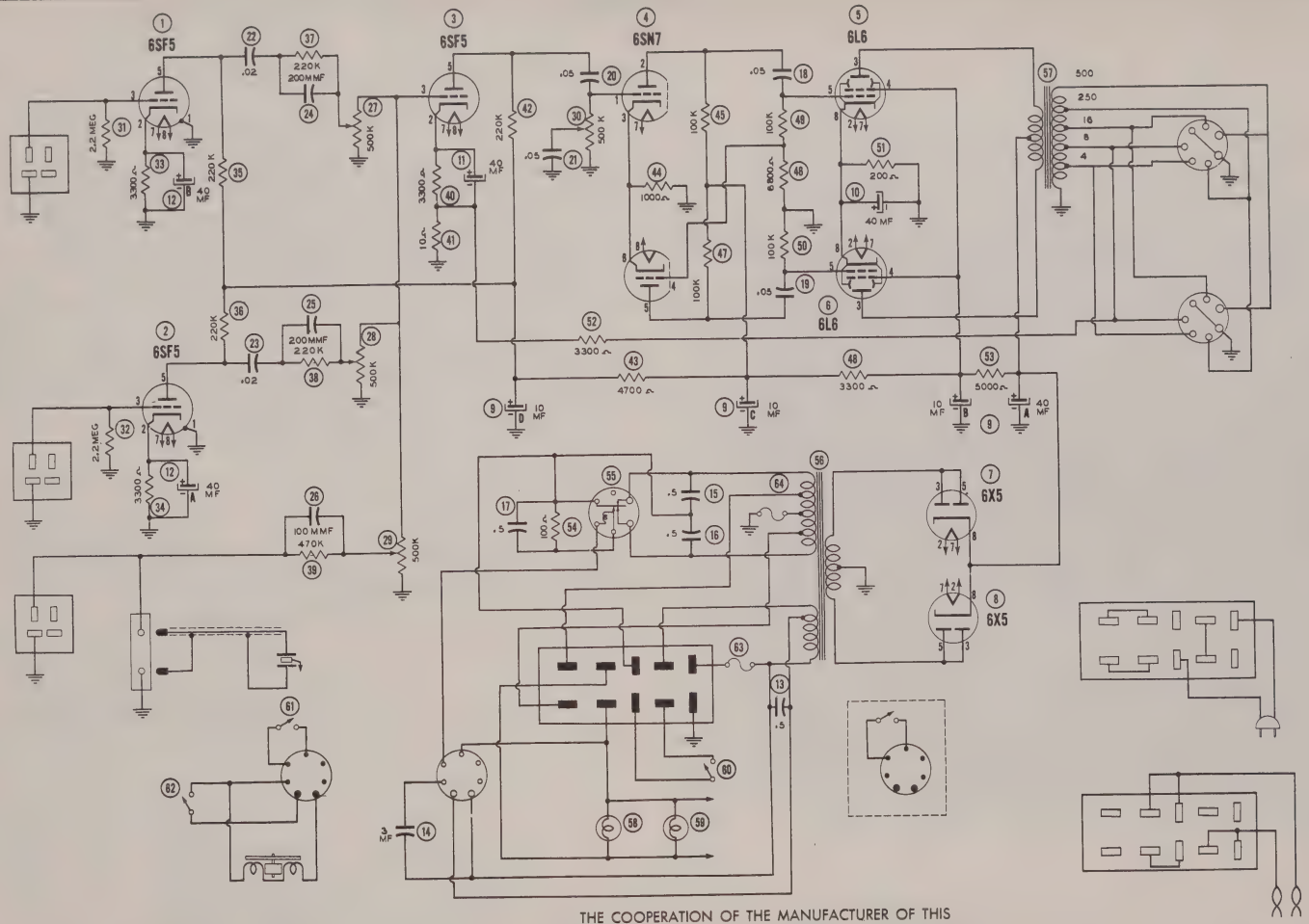
DATE 4/49 497-17 SET #59 FOLDER 17

CHASSIS—BOTTOM VIEW



RAULAND MODEL 1821

RAULAND MODEL 1821



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MODEL 8230

TRADE NAME Silvertone, Model 8230 (Ch. 101.835)
SUPPLIER Sears, Roebuck & Co., 925 S. Homan St., Chicago, Illinois
TYPE SET Three Power Operated Multi-Band Superheterodyne Receiver
TUBES (SIX) Types 1LG5 RF Amp., 1LC6 Converter, 1LC5 IF Amp., 1LD5 DET-AVC-AF, 1LB4 Power Output 35Y4 Rectifier
POWER SUPPLY 110-120 Volts AC-DC or 1.5 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING .26 Amp., @ 117 Volts AC or 240 MA @ 1.5 Volts DC and 7 MA @ 90 Volts DC
TUNING RANGE—BROADCAST 535-1725KC SHORT WAVE BAND "A" 9.3-10.5MC, "B" 10.3-12.5MC, "C" 14.5-16MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn tuning cores fully in (low frequency end of dial) and set pointer 1 5/16 inch from left edge of dial back plate. This is the calibration mark referred to in steps below.

Before attempting alignment turn tuning cores fully out (high frequency end of dial) and adjust core of SW shunt coil 72 for approximately 1 21/32 inch from top of core to top of winding.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid) of 1LC6. Low side to B-.	455KC	BC (fully counter clock-wise)	Tuning cores fully in.	Across Voice Coil	A1, A2 A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce modulation.
2.	75MMFD	High side to Antenna terminal. Low side to B-.	1725KC	"	Tuning cores fully out.	"	A5	Adjust for maximum output.
3.	75MMFD	"	"	"	Tune for maximum output.	"	A6, A7	" " " "
4.	75MMFD	"	1500KC	"	1500KC	"	A8, A9 A10	Adjust for maximum output. Repeat steps 2, 3, and 4 until no further improvement can be made.
5.	400Ω carbon res.	"	15.2MC	Band "C" (fully clock-wise)	2 3/16" from calibration mark.	"	A11	Adjust for maximum output.
6.	400Ω carbon res.	"	"	"	Tune for maximum output.	"	A12, A13	Rock tuning control and adjust for maximum output.
7.	400Ω carbon res.	"	11.8MC	Band B (1 position counter clock-wise)	2 3/4 " from calibration mark	Across Voice Coil	A14,	Adjust for maximum output.
8.	400Ω carbon res.	"	"	"	Tune for maximum output	"	A15, A16	Rock tuning control and adjust for maximum output.
9.	400Ω carbon res.	"	9.6MC	Band A (2 positions) counter clock-wise)	2 23/32 inch from calibration mark	"	A17	Adjust for maximum output.
10.	400Ω carbon res.	"	"	"	Tune for maximum output.	"	A18, A19	Rock tuning control and adjust for maximum output.

SILVERTONE
MODEL 8230, (CH. 101.835)
BATTERY-LINE OPERATED

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
1	RF Amp.	1LG5	1LG5		
2	Converter	1LC6	1LC6	7AK	
3	IF Amp.	1LC5	1LC5	7AO	
4	DET-AVC-AF	1LD5	1LD5	6AX	
5	Power Output	1LB4	1LB4	5AD	
6	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	
7A	80	150	R60803		UPTDJ63#	DY804020-150	D5847	◓ Filter
B	30	150				"		■ "
C	100	25				M-100-25		▲ Filament Bypass
D	40	25			BR502			" "
8	12	150	R61840	PRS150/12	BR1215	M-12-150	UT-121	Decoupling
9	.05	400		484-05	DT4S5	ST-4-05	TC-15	Line Filter
10	.2	200		484-2	DT4P2	ST-4-2	72P3	" Isolation
11	.001	600		684-001	DT6D1	ST-6-001	TC-21	Output Plate Bypass
12	.005	400		484-005	DT6D5	ST-6-005	TC-25	Audio Coupling
13	.01	400		484-01	DT4S1	ST-4-01	TC-11	AF Screen Bypass
14	.05	200		484-05	DT2S5	ST-4-05	TC-15	RF Bypass Power Supp.
15	.001	600		684-001	DT6D1	ST-6-001	TC-21	Audio Coupling
16	.1	200		484-1	DT2P1	ST-2-1	TC-1	Filament Bypass
17	.01	400		484-01	DT4S1	ST-4-01	TC-11	Conv. Screen Bypass
18	.01	400		484-01	DT4S1	ST-4-01	TC-11	Osc. Anode Decoup.
19	.1	200		484-1	DT2P1	ST-2-1	TC-1	Filament Bypass
20	.01	400		484-01	DT4S1	ST-4-01	TC-11	AVC Filter
21	.01	400		484-01	DT4S1	ST-4-01	TC-11	Decoupling
22	.01	400		484-01	DT4S1	ST-4-01	TC-11	AVC Filter
23	.01	400		484-01	DT4S1	ST-4-01	TC-11	RF Screen Bypass
24	.01	400		484-01	DT4S1	ST-4-01	TC-11	Ext. Grnd. Isol. See Note
25	.005	400		484-005	DT6D5	ST-6-005	TC-25	RF Coupling
26	250	500		1468-00025	5W5T25	MO.5-325	1FM-325	Tone Compensation Feedback
27	15	500						
28	50	500		1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid cap
29	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	RF Coupling
30	1000	500		1467-001	1W5D1	MW.5-21	1FM-21	RF Bypass
31	5000	500		1467-005	1D5D5	MW.5-25	1FM-25	Filament Bypass
32	100	500		1468-0001	5W5T1	MO.5-31	1FM-31	RF Coupling
33	150	500		1468-00015	5W5T15	MO.5-315	1FM-315	Ant. "
34	250	500		1468-00025	5W5T25	MO.5-325	1FM-325	RF "
35	100	500		1468-0001	5R5T1	MS.5-31	MS-31	Fixed Pad

Note: Not used in early production.
\# Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	
36A	500KΩ Tone		R62577			Volume control and switch.
B	Switch					Tone switch.

CHASSIS—TOP VIEW

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LG5	2.5VDC	90VDC	45VDC	2.5VDC	1.2VDC	0V	0V	1.2VDC
2	1LC5	4VDC	90VDC	45VDC	§-4.4VDC	35VDC	0V	0V	.2VDC
3	1LC5	5.2VDC	95VDC	50VDC	4VDC	4VDC	0V	0V	4VDC
4	1LD5	1.2VDC	35VDC	20VDC	-.1VDC	0V	0V	0V	0V
5	1LB4	10VDC	90VDC	95VDC	0V	95VDC	0V	0V	8.5VDC
6	35Y4	117VAC	105VAC	0V	108VAC	0V	0V	105VDC	80VAC

§TAKEN WITH VACUUM TUBE VOLTMETER.

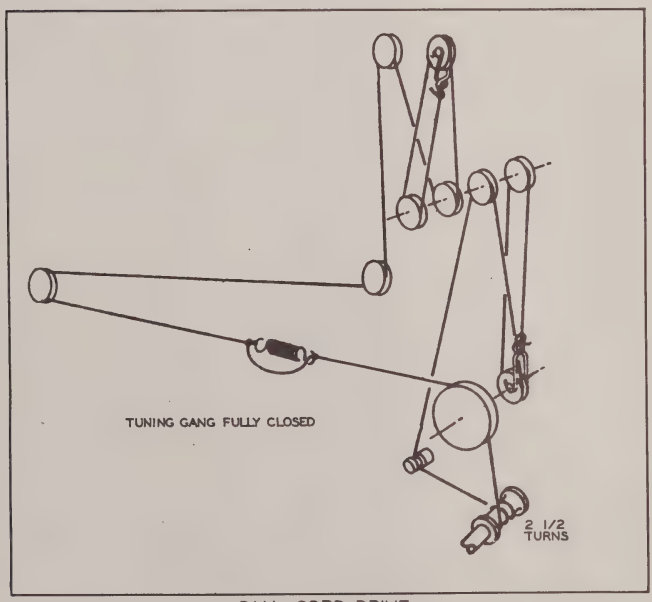
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LG5	*	4.5KΩ	72KΩ	*	*	5 Meg.	INF	*
2	1LC6	*	3.5KΩ	38KΩ	180KΩ	72KΩ	5 Meg.	2 Meg.	*
3	1LC5	*	3.5KΩ	72KΩ	*	*	15 Meg.	0Ω	*
4	1LD5	*	1 Meg.	5 Meg.	550KΩ	INF	15 Meg.	0Ω	0Ω
5	1LB4	*	2800Ω	2500Ω	INF	2500Ω	2.2 Meg.	0Ω	*
6	35Y4	550Ω	550Ω	0Ω	500Ω	INF	INF	2300Ω	500Ω

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



DIAL CORD DRIVE

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES	
37	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn.	RF Grid
38	470Ω	½		BTS-470	Yl.-Vi.-Br.	Filament String
39	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn.	AVC Net
40	180KΩ	½		BTS-180K	Br.-Gray-Yl.	Osc. Grid
41	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn.	Conv. "
42	68KΩ	½		BTS-68K	Blue-Gray-Or.	" Screen
43	33KΩ	½		BTS-33K	Or.-Or.-Or.	Osc. Anode Decoupling
44	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn.	AVC Net.
45	68KΩ	½		BTS-68K	Blue-Gray-Or.	Screen Dropping
46	680KΩ	½		BTS-680	Blue-Gray-Br.	Decoupling
47	68Ω	½		BW-½-68	Blue-Gray-Blk.	Filament String
48	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn.	AVC Net.
49	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue	AF Grid
50	6.8 Meg.	½		BTS-6.8 Meg.	Blue-Gray-Grn.	" Screen
51	47KΩ	½		BTS-47K	Yl.-Vi.-Or.	Tone Compensation
52	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.	AF Plate Load
53	820Ω	½		BTS-820	Gray-Red-Br.	Bias
54	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn.	Output Grid
55	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Surge Limiter
56	.72Ω	1	R45254	ABA-1	Vl.-Red-Silver	Series Filament See Note 1.
57	1800Ω	2		BTS-1800	Br.-Gray-Red	Bias
58	1500Ω	½		BTS-1500	Br.-Grn.-Red	Filament String
59	820Ω	1		BTA-820	Gray-Red-Br.	Filter
60	680Ω	½		BTS-680	Blue-Gray-Br.	Filter
61A	1600Ω	5	R61838	ABA-2000		Filament Dropping See Note 2.
B	457Ω	10		ABA-500		Line " " " 3.
62	820Ω	½		BTS-820	Gray-Red-Br.	Filament Bleeder
63	100Ω	2		AB-100	Br.-Blk.-Br.	Line Dropping " " 4.
64	25Ω	1	R40232		Red-Grn.-Blk.	Rectifier Ballast

Note 1. On IRC replacement set slider .72Ω from end.
Note 2. " " " " " 1600Ω " " .
Note 3. " " " " " 457Ω " " .
Note 4. On some models item 61B is changed to 547Ω 15 watt and item 63 is deleted.

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
65	8250Ω	3.4Ω	600Ω	.8Ω	R62253	A-3823	T22S87	A-2901	

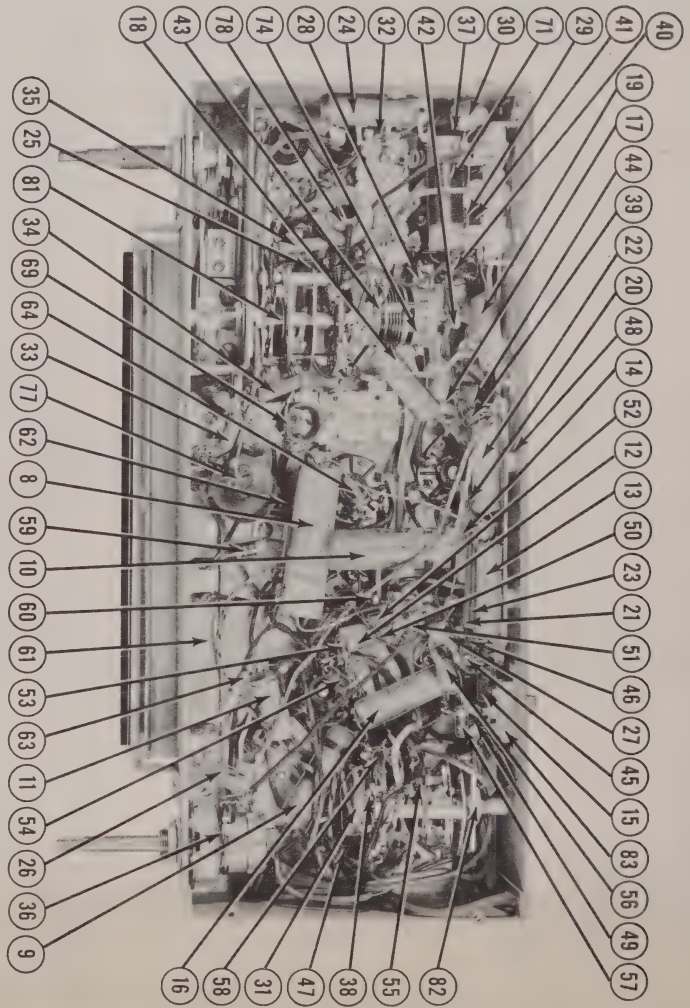
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
66A	PM	3.4Ω	R62671	ST-107** MOD P5-V	52A1	** Use adapter baffle.
	CONE DIA.	V. C. DIA.				
67A	5 1/8 "	9/16"				
	FIELD	V. C. IMP.				
66B	PM	3.7Ω	R57061	ST-108 MOD-P6-X		
	CONE DIA.	V. C. DIA.				
67B	5 1/4"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA MEISSNER PART No.	
68	BC Ant. Coil		7.5Ω	R63128		Items 68, 70, 72 & 73 are slug tuned and ganged together. They may be obtained as a unit- Part No. R62724.
69	SW Ant. Coil	.5Ω	.2Ω	R45074		
70	BC RF Coil		4.3Ω	R63130		
71	SW-Shunt RF Coil		.2Ω	R45077		
72	SW RF Coil		4Ω	R63131		
73	BC Osc."	.1Ω	.1Ω	R63129		

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA MEISSNER PART No.
74	SW Shunt				
	Osc. Coil	1.5Ω	.2Ω	R57078	
75	Input IF	10.5Ω		R57120	
76	Output IF	13Ω		R62571	
77	RF Choke		125Ω	R45255	
78	RF Plate Choke		125Ω	R45255	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA SILVERTONE PART No.	REPLACEMENT DATA	NOTES
79	Bayonet	6-8V	0.15A	Brown	R20963		Type #47

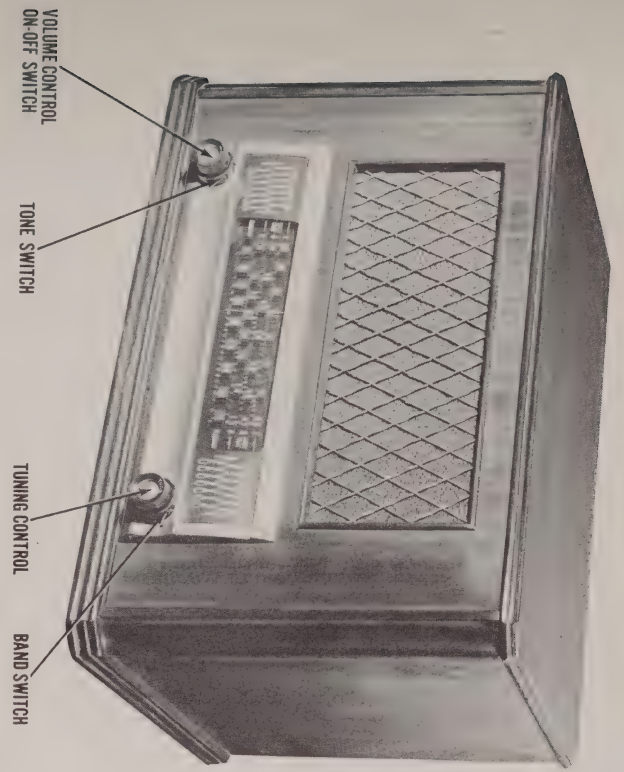
BATTERIES

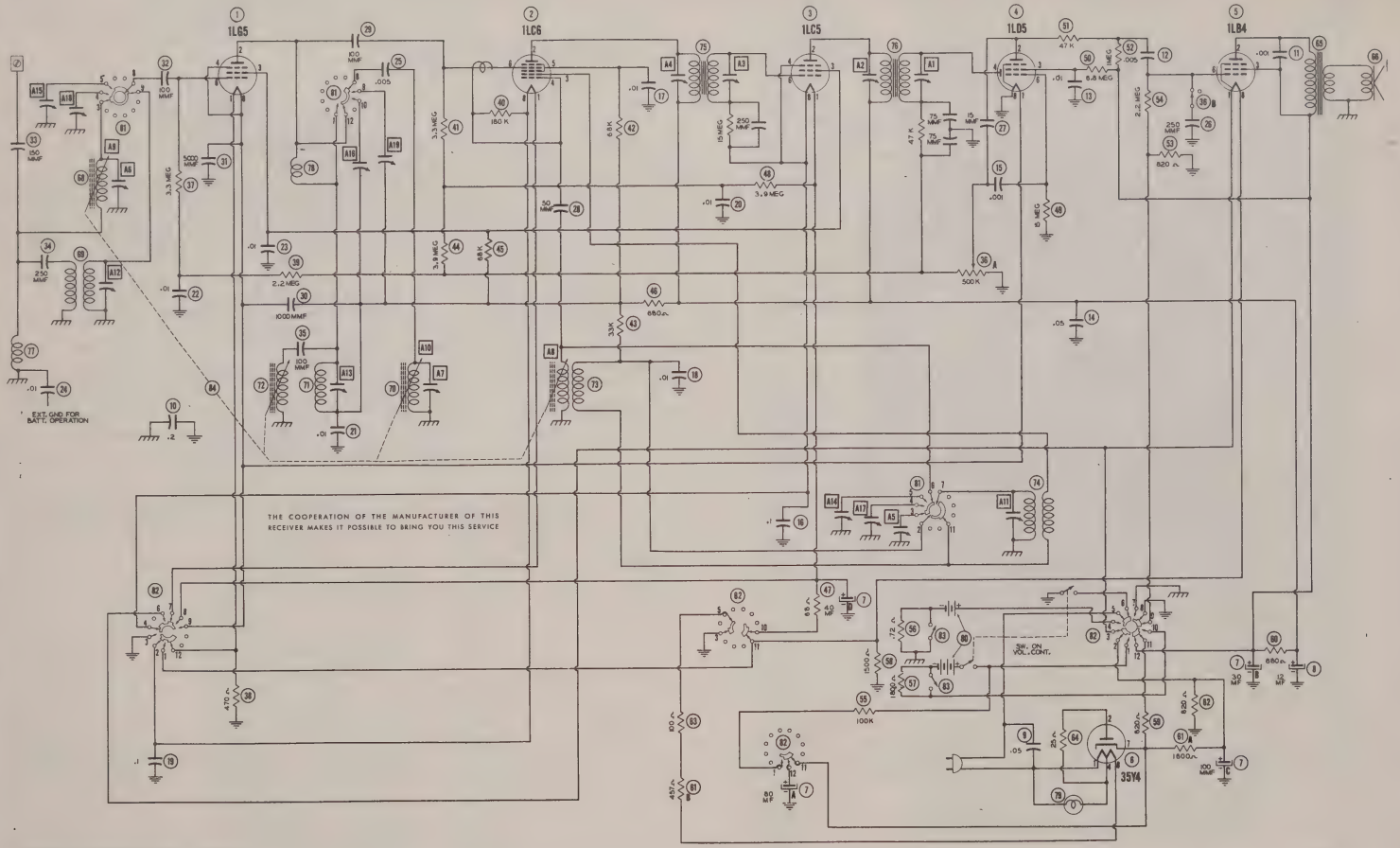
ITEM No.	VOLTAGE	SILVERTONE PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
80	1.5 V"A" 90 V"B"	6308			758			17GD60	

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
81	Swftch	R57064	Band
82	"	R61828	AC-DC/Battery
83	"	R57038	Thrift
84	Tuning Assembly	R62724	
A5	Trimmer Strip	R57081	BC Osc. Adj.
A6			" Ant. "
A7			" RF "
A11	" "	R57082	Band "C" Osc. Adj.
A12			" " Ant. "
A14			" B Osc. "
A15			" " Ant. "
A18			" A " "
A13	" "	R57020	" C RF "
A16			" B " "
A19			" A " "
A17	Trimmer	R57080	" " Osc. "
	Dial	R62586	
	Dial Pointer	R62557	

DATE 4/49 497-18 SET #59 FOLDER 18





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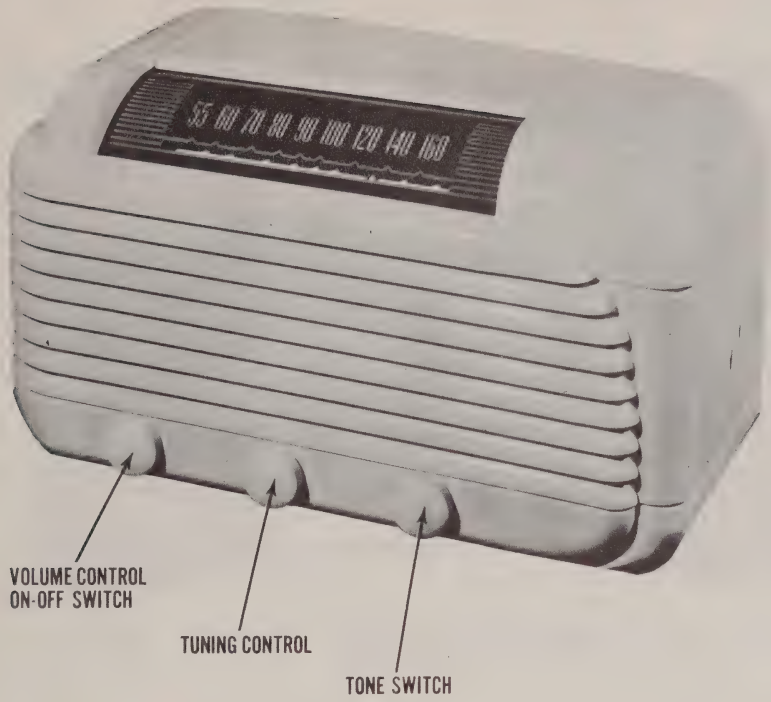
STEWART-WARNER
MODELS B61T1, (CODE 9046-A)
B61T2 (CODE 9046-B)



STEWART-WARNER
MODELS B61T1, (CODE 9046-A)
B61T2 (CODE 9046-B)

STEWART-WARNER MODEL B61T1

TRADE NAME	Stewart-Warner, Models B61T1(Code 9046-A), B61T2(Code 9046-B)
MANUFACTURER	Stewart-Warner Corp., 1826 Diversey Parkway, Chicago, Illinois.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna.
TUBES (SIX)	Types 12SK7 RF Amp., 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY RATING	110-120 Volts AC .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540KC-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning cap. fully closed and set pointer to last calibration mark on front edge of dial backplate. Calibration marks are as follows:(Left to Right) left hand reference, 600KC, 1400KC, & 1500KC.

Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	200 MMF	High side to pin 8(Grid) 12SA7(V2) Low side to B-.	455KC	Point of non-interference.	Across voice coil.	A1,A2, A3,A4	Adjust for maximum output.
2	200 MMF	High side to ext. ant. terminal. Low side to B-.	1650KC	Tuning cap. fully open.	"	A5	" " "
3	200 MMF	"	1500KC	Tune for maximum output.	"	A6,A7	" " "

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PARTS LIST AND DESCRIPTIONS

STEWART-WARNER MODEL 861T1

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STEW.-WARNER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	12SK7	12SK7	8N	
V2	Converter	12SA7	12SA7	8R	
V3	IF Amp.	12SK7	12SK7	8N	
V4	Det.-AVC-AF	12SA7	12SQ7	8Q	
V5	Power Output	35L6GT	35L6GT	7AC	
V6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STEWART-WARNER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	500256	AF88D	UP4215	DY-4020-150	EL-24	■ Filter.
C1B	20	150						▲ "
C2	02	400	502152	P488-02	GT4S2	ST-4-02	TM-12	Ext. Ant. Isolation.
C3	50	500	502159	1468-00005	5W5Q5	MO.5-45	1FM-45	Oscillator Grid Cap.
C4	.25	200	502262	P488-25	GT2P25	ST-2-25	68P24	" Anode Bypass.
C5	.1	200	502155	P288-1	GT2P1	ST-2-1	68P17	AVC Filter.
C6	.15	400	502158	P488-15	GT2P2	ST-4-2	72P3	Line Isolation.
C7	150		505026	1468-00015	5W5T15	MO.5-315	1FM-315	Diode Filter. Cer.
C8	150		505026	1468-00015	5W5T15	MO.5-315	1FM-315	" " "
C9	2000		504977	1467-002	1W5D2	MW.5-22	1FM-22	Tone Compensation.Cer.
C10	2000		504977	1467-002	1W5D2	MW.5-22	1FM-22	Audio Coupling. Cer.
C11	100	500	502160	1468-0001	5W5T1	MO.5-31	1FM-31	AF Plate Bypass.
C12	05	200	505028	P288-05	GT2S5	ST-4-05	TM-15	Audio Coupling.
C13	22		504973	1468-000025	5W5Q2	MO.5-425	MS-42	Feedback.Cer.See Note.
C14	01	400	502151	P488-01	GT4S1	ST-4-01	TM-11	Output Plate Bypass.
C15	05	400	502157	P488-05	GT4S5	ST-4-05	TM-15	RF Bypass.
C16	.15	600	505071	P488-15	GT6P2	ST-6-2	68P40	Tone Compensation.

Note: Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEW-WARNER PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	504967	D11-137	AM-61-S	Volume Control.
B	Shaft		Not Req.	E	KSS-3	Attach to R1A per instructions.
C	Switch		" "	41	SW-A	" " "

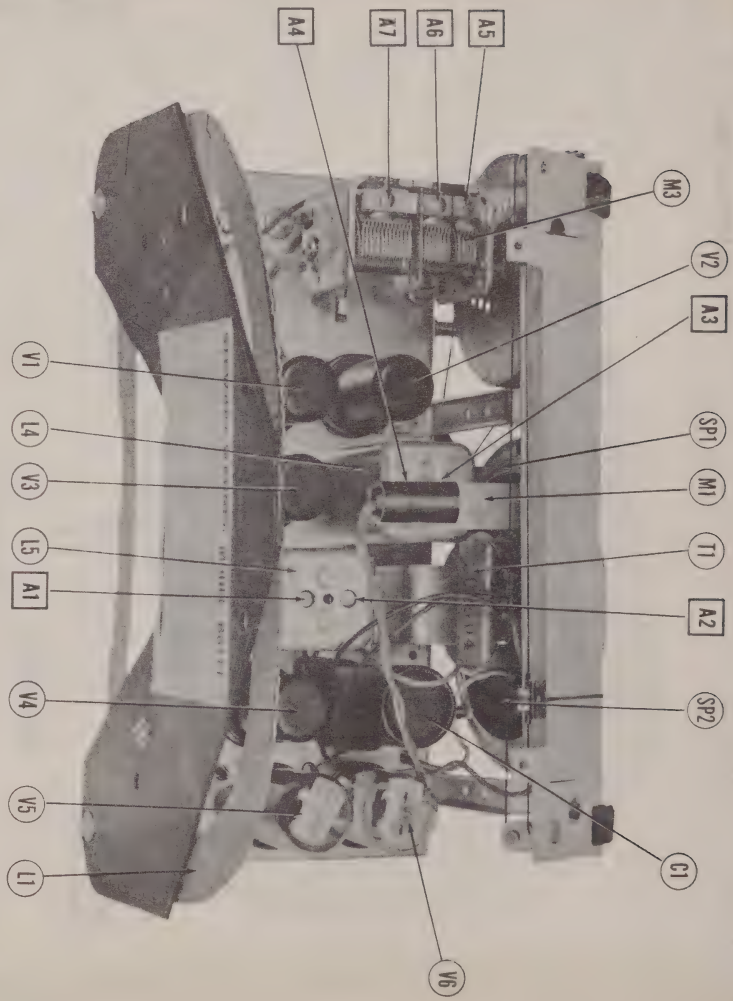
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEW.-WARNER PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	220Ω	½	510025	BW-½-220	Red-Red-Br.	RF Cathode.
R3	22KΩ	½	510061	BTS-22K	Red-Red-Or.	Oscillator Grid.
R4	4700Ω	½	510049	BTS-4700	Yl.-Vi.-Red.	Oscillator Anode.
R5	150Ω	½	510021	BW-½-150	Br.-Grn.-Br.	IF Cathode.
R6	1 Meg.	½	510091	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network.
R7	33KΩ	½	510064	BTS-33K	Or.-Or.-Or.	Diode Filter.
R8	220KΩ	½	510079	BTS-220K	Red-Red-Yl.	Line Isolation.
R9	10 Meg.	½	510097	BTS-10 Meg.	Br.-Blk.-Blue.	AF Grid.
R10	470KΩ	½	510085	BTS-470K	Yl.-Vi.-Yl.	" Plate.
R11	470KΩ	½	510085	BTS-470K	Yl.-Vi.-Yl.	Output Grid.
R12	150Ω	½	510121	BW-½-150	Br.-Grn.-Br.	" Cathode.
R13	100KΩ	½	510073	BTS-100K	Br.-Blk.-Yl.	Tone Compensation.
R14	1500Ω	1	510239	BTA-1500	Br.-Grn.-Red.	Filter.
R15	33Ω	1	510210		Or.-Or.-Blk.	Rectifier Ballast.
R16	390Ω	½	510029		Or.-White-Br.	Pilot Light Shunt.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: STEWART-WARNER PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	INSTALLATION NOTES
T1A	2300Ω	3.2Ω	230Ω tapped @ 12.5Ω	.5Ω	502904	A-3330			Used with A-502998 Spkr.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		STEW. WARNER PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1B					504761				Used with C-502998 Spkr.
T1C					502213				" " R-502998 "
T1D					504244				" " W-502998 "
T1E					504756				" " Y-502998 "
T1F					504758				" " Z-502998 "

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			STEW-WARNER PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V.C. IMP.		ST-105		
SP1	PM	3.3Ω	A-502998	Mod. P5-X	5A07	
	CONE DIA.	V.C. DIA.				
SP2	4 11/16"	9/16"				

R F COILS

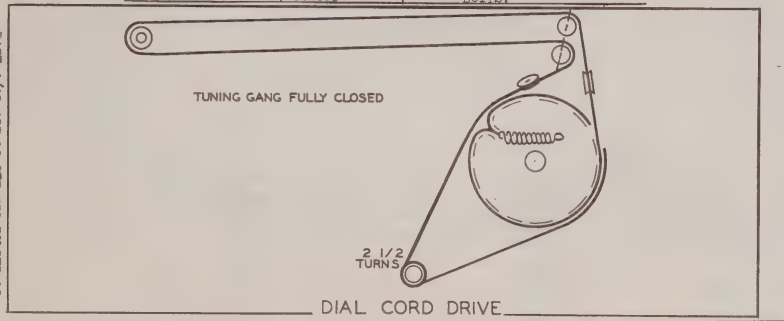
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	STEWART-WARNER PART No.	MEISSNER PART No.	
L1	Loop Ant.	.1Ω	1.2Ω	506282		
L2	RF Coil.	100Ω	13Ω	502838		
L3	Osc. Coil.	1.2Ω	10Ω	507211		
L4	Input IF	20Ω	20Ω	502102	16-5712	
L5	Output IF	19Ω	19Ω	502103	16-5714	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					STEWART-WARNER PART No.		
M1	Bayonet	6-8V	0.15A	Brown	118921		Type # 47

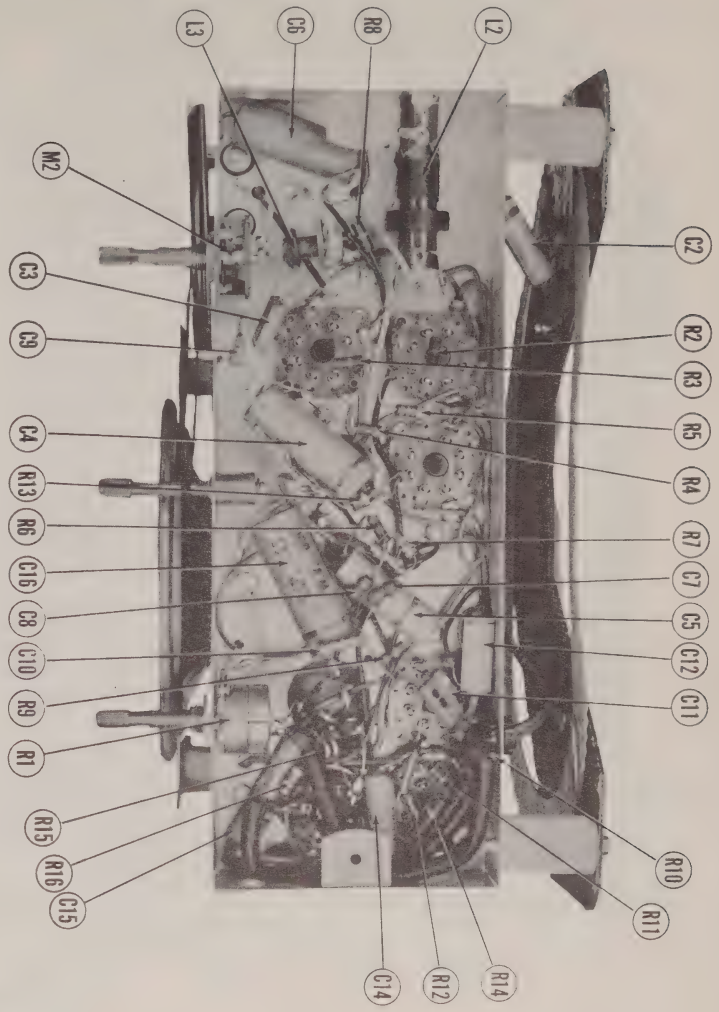
MISCELLANEOUS

ITEM No.	PART NAME	STEWART-WARNER PART No.	NOTES
M2	Switch	500546	Tone
M3	3 Gang Var.Cap.	502123	(28-465MMF,18-256MMF,11-103MMF)
	Cabinet	502665	Ivory for Model B61T1.
	"	502666	Mahogany for Model B61T2.
	Dial Scale	506294	Glass.
	Dial Pointer	502690	
	Knob	502564	Model B61T1.
	Knob	502563	" B61T2.



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



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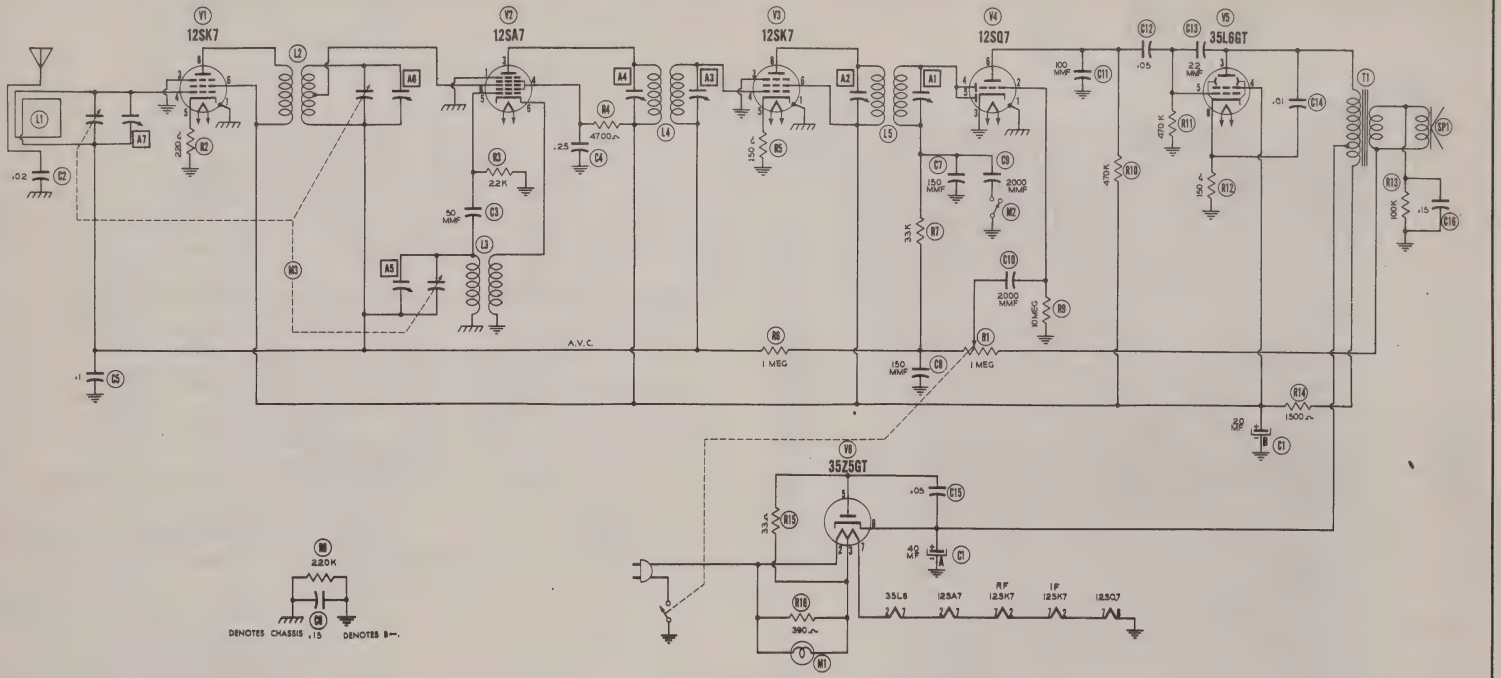
STEWART-WARNER MODEL B61T1

STEWART-WARNER MODEL B61T1



IF = 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	12SK7	0V	85VAC	0V	-.3VDC	1.6VDC	85VAC	38VAC	80VDC
V2	12SA7	0V	50VAC	80VDC	60VDC	5-6.3VDC	0V	38VAC	-.3VDC
V3	12SK7	0V	12VAC	0V	-.3VDC	1.2VDC	85VDC	25VAC	80VDC
V4	12SQ7	0V	-.8VDC	0V	-.3VDC	-.3VDC	45VDC	12VAC	0V
V5	35L6GT	117VDC	85VAC	110VDC	85VDC	0V	0V	50VAC	5.3VAC
V6	35Z5GT	0V	117VAC	112VAC	0V	110VAC	0V	85VAC	120VDC

TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	12SK7	220KΩ	24Ω	0Ω	2.5 Meg.	220Ω	*1.5KΩ	38Ω	*1.5KΩ
V2	12SA7	220KΩ	52Ω	*1.5KΩ	*6KΩ	28KΩ	1Ω	38Ω	2.5 Meg.
V3	12SK7	220KΩ	12Ω	0Ω	2.5 Meg.	150Ω	*1.5KΩ	24Ω	*1.5KΩ
V4	12SQ7	220KΩ	10 Meg.	0Ω	1 Meg.	1 Meg.	*600KΩ	12Ω	0Ω
V5	35L6GT	80KΩ	85Ω	*200Ω	*1.5KΩ	600KΩ	Inf.	52Ω	150Ω
V6	35Z5	Inf.	120Ω	110Ω	Inf.	150Ω	Inf.	85Ω	90KΩ

* Measured from pin 8 of V6 (35Z5GT)

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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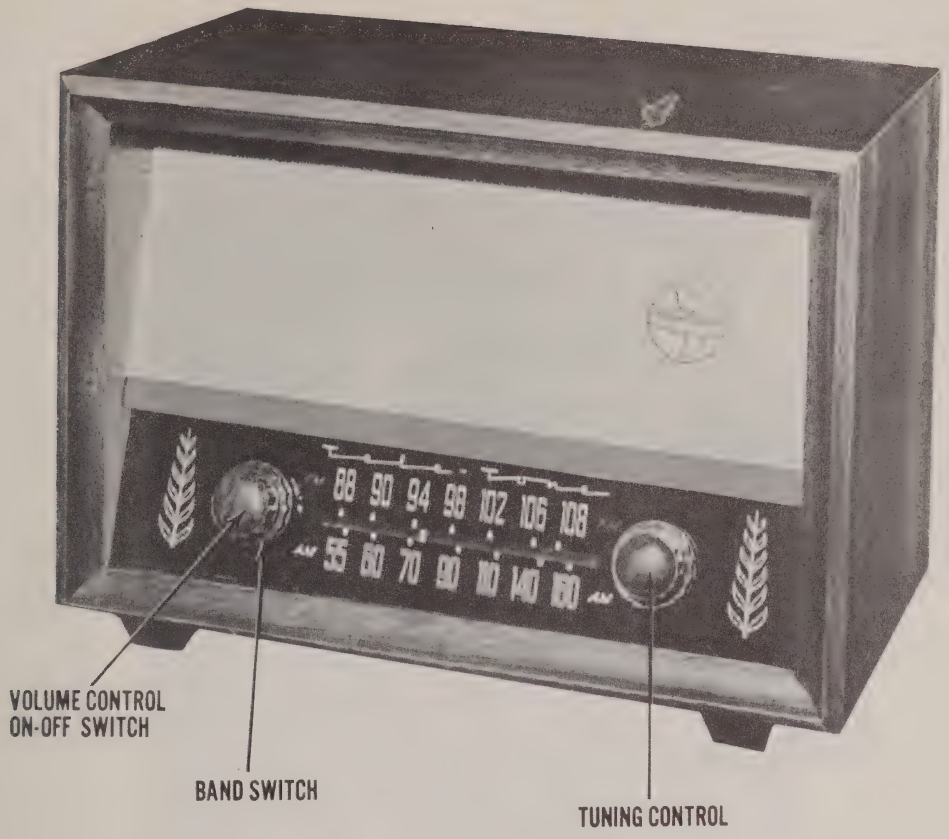
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



TELE-TONE
MODELS 158, 198

Model 198

TRADE NAME	Tele-Tone, Models 158, 198 (Ch. Series AT).
MANUFACTURER	Tele-Tone Radio Co., 540 W. 58th St., New York 19, New York.
TYPE SET	AC Operated AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES (EIGHT)	Types 6BJ6 FM RF Amp., 12AT7 FM Converter, 12BE6 AM Converter, 6BJ6 1st IF Amp., 12BA6 FM 2nd IF Amp., 19T8 Det.-AVC-AF, 35C5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC
RATING	.37Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	535-1600KC FREQ. MOD. 88-108MC

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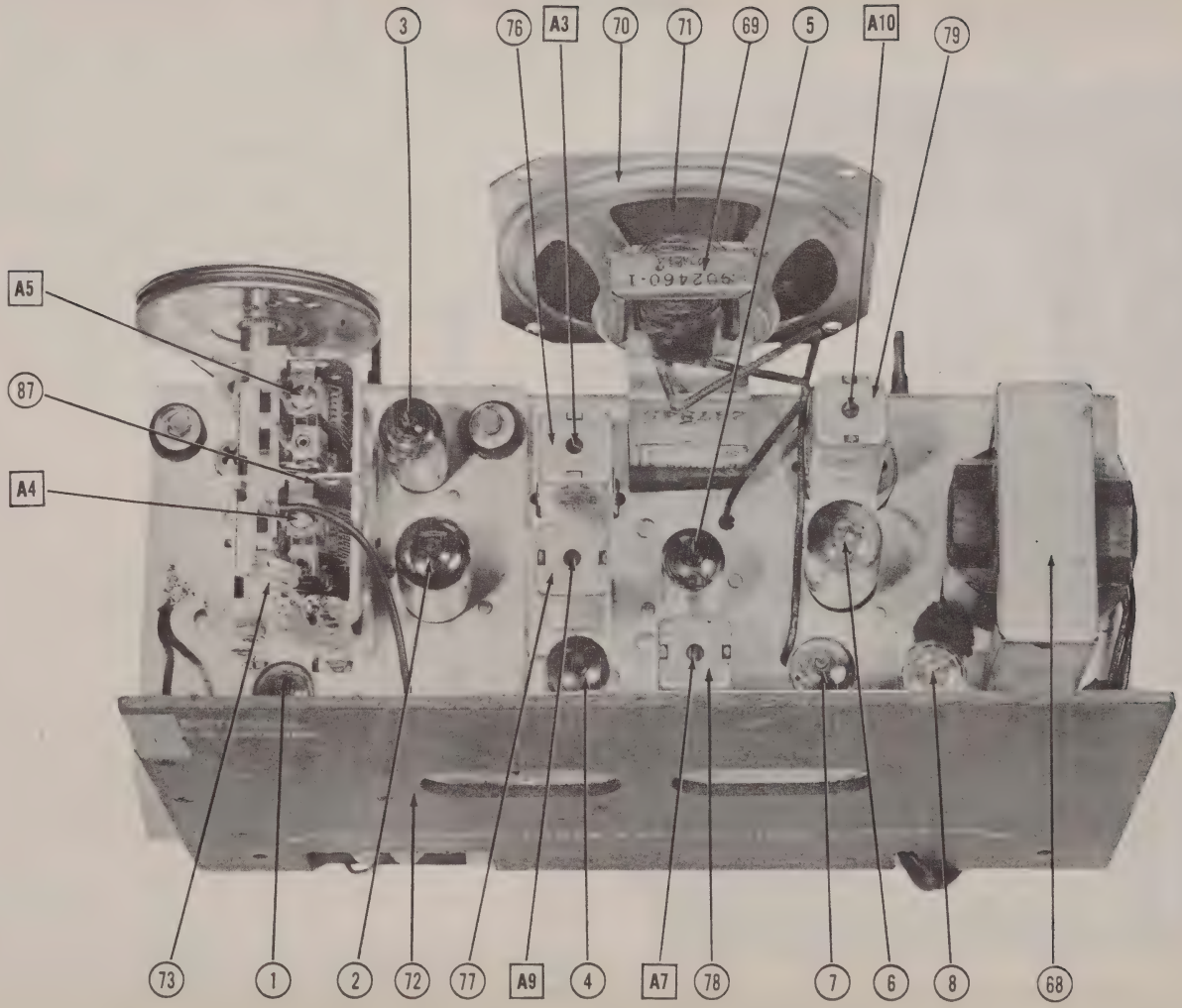
DATE 4/49 497-20 SET #59 FOLDER 20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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.		6BJ6	7CM	
2	FM Converter		12AT7		
3	AM Converter		12BE6	7CH	
4	1st IF Amp.		6BJ6	7CM	
5	FM 2nd IF Amp.		12BA6	7BK	
6	Det.-AVC-AF		19T8		
7	Power Output		35C5		
8	Rectifier		35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: *AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	20	150		PRS A 40302	EZ422150	DSB-403020-150	TA-303	Filter Red.
9B	40	150		PRS 150/20		M-10-25	TA-10	Filter Green.
9C	20	150						Filter Blue.
9D	10	25						Cathode Bypass Yellow.
10	4	50		PRS 150/4	BR-550	M-4-450	TA-55	Stabilizing Cap.
11	.05	600		684-05	GT6S5	ST-6-05	TM-15	Line Filter.
12	.02	1000		1084-02	GT16S2	STM-10-02	TM-12	Output Plate Bypass.
13	.01	600		684-01	GT6S1	ST-6-01	TM-11	Audio Coupling.
14	.002	600		684-002	GT6D2	ST-6-002	TM-22	" "
15	.002	600		684-002	GT6D2	ST-6-002	TM-22	De-emphasis.
16	.05	600		684-05	GT6S5	ST-6-05	TM-15	AVC Filter.
17	.05	600		684-05	GT6S5	ST-6-05	TM-15	Decoupling.
18	.05	600		684-05	GT6S5	ST-6-05	TM-15	Filament Bypass.
19A	2000	300		1467-002	1W5D2	MW.5-22	1FM-22	RF Bypass. Cer.
19B	2000	300		1467-002	1W5D2	MW.5-22	1FM-22	Filament Bypass.Cer.
20	150	500		1468-00015	5W5T15	MO.5-315	1FM-315	Diode Load Cap.
21	5000	300		1467-005	1D5D5	MW.5-25	1FM-25	2nd IF Decoup. Cer.
22A	2000	300		1467-002	1W5D2	MW.5-22	1FM-22	" " Cathode Bypass Cer.
22B	2000	300		1467-002	1W5D2	MW.5-22	1FM-22	Filament Bypass. Cer.
23	150	500		1468-00015	5W5T15	MO.5-315	1FM-315	IF Coupling.
24	68	300		1468-000075	5W5Q7	MOS.5-47	1FM-475	Diode Filter. Cer.
25	150	500		1468-00015	5W5T15	MO.5-315	1FM-315	" " "
26	68	300		1468-000075	5W5Q7	MOS.5-47	1FM-475	2nd IF Coupling.Cer.
27A	4000	300		1467-004	1D5D4	MW.5-24	1FM-24	Decoupling. Cer.
27B	4000	300		1467-004	1D5D4	MW.5-24	1FM-24	Filament Bypass. Cer.
28	5000	300		1467-005	1D5D5	MW.5-25	1FM-25	AVC Filter. Cer.
29	1000	500		1468-001	1W5D1	MW.5-21	1FM-21	Mixer Plate Decoup.
30	33	500						Fixed Trimmer.
31A	2000	300		1467-002	1W5D2	MW.5-22	1FM-22	RF Bypass. Cer.
31B	2000	300		1467-002	1W5D2	MW.5-22	1FM-22	Mixer Cath. Bypass.Cer
32	47	300		1468-00005	5W5Q5	MO.5-45	1FM-45	Osc. Grid Cap. Cer.
33	1	300		1468-000001				Osc. Coupling. Cer.
34	100	300		1468-0001	5W5Q1	MO.5-31	1FM-31	RF Coupling. Cer.
35A	2000	300		1467-002	1W5D2	MW.5-22	1FM-22	RF Decoupling. Cer.
35B	2000	300		1467-002	1W5D2	MW.5-22	1FM-22	RF Cath. Bypass.Cer.
36	5000	300		1467-005	1D5D5	MW.5-25	1FM-25	AVC Filter. Cer.
37	47	300		1468-00005	5W5Q5	MO.5-45	1FM-45	Ant. Coupling. Cer.
38A	2000	300		1467-002	1W5D2	MW.5-22	1FM-22	Filament Bypass.Cer.
38B	2000	300		1467-002	1W5D2	MW.5-22	1FM-22	" " "

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
39A B	1 Meg. Switch	½	VC-17			Volume Control and Switch. Band Switch.

This is a dual unit with a concentric shaft.

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: TELE-TONE PART No.	REPLACEMENT DATA: MEISSNER PART No.	
72	Loop Ant.	.2Ω	3.5Ω	LP-13		
73	FM RF Coil.		0Ω	LC-12		
74	AM Osc.Coil.	.8Ω	6Ω	LC-9	14-1060 ‡	‡ Add 50 MMF Cap. from high side of tuning cap. to Oscillator grid.
75	FM Osc.Coil.		0Ω	LC-11		
76	AM 1st IF	15Ω	15Ω	LF-32	16-6678	
77	FM 1st IF	.8Ω	.6Ω	LF-30		
78A	AM 2nd IF		8.5Ω	LF-31		
78B	FM 2nd IF		1Ω			
79	Ratio Det.	1.5Ω	.8Ω	LF-33		
80	RF Choke		.5Ω	LC-15		
81	RF Choke		1.5Ω	LC-14		
82	RF Choke		2Ω	LC-16		
83	Fil.Choke		.5Ω	LC-13		
84	Fil.Choke		.5Ω	LC-13		
85	Fil.Choke		.5Ω	LC-13		

MISCELLANEOUS

ITEM No.	PART NAME	TELE-TONE PART No.	NOTES
86	Switch		Band.
87	2 Gang Var.Cap.		(21-387MMF, 24-165MMF).

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	TELE-TONE PART No.	IRC PART No.		
40	1000Ω	½		BTS-1000	Br.-Blk.-Red.	Antenna Loading.
41	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	FM RF Grid.
42	68Ω	½		BW-½-68	Blue-Gray-Blk.	FM RF Cathode.
43	1000Ω	½		BTS-1000	Br.-Blk.-Red.	FM RF Plate Decoupling.
44	2200Ω	½		BTS-2200	Red-Red-Red.	FM Mixer Cathode.
45	1000Ω	½		BTS-1000	Br.-Blk.-Red.	FM Mixer Plate Decoupling.
46	10KΩ	½		BTS-10K	Br.-Blk.-Or.	FM Oscillator Grid.
47	1000Ω	½		BTS-1000	Br.-Blk.-Red.	FM Oscillator Plate Load.
48	22KΩ	½		BTS-22K	Red-Red-Or.	AM Oscillator Grid.
49	68Ω	½		BW-½-68	Blue-Gray-Blk.	AM FM IF Cathode.
50	68Ω	½		BW-½-68	Blue-Gray-Blk.	FM IF Cathode.
51	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	FM IF Grid.
52	1000Ω	½		BTS-1000	Br.-Blk.-Red.	FM IF Decoupling.
53	1000Ω	½		BTS-1000	Br.-Blk.-Red.	AVC Network.
54	220KΩ	½		BTS-220K	Red-Red-Yl.	AVC Network.
55	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Diode Filter.
56	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	" "
57	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn.	AVC Network.
58	180Ω	½		BW-½-180	Br.-Gray-Br.	Balancing.
59	39KΩ	½		BTS-39K	Or.-White-Or.	De-emphasis.
60	18KΩ	½		BTS-18K	Br.-Blue-Or.	Ratio Detector Diode Load.
61	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue.	AF Grid.
62	220KΩ	½		BTS-220K	Red-Red-Yl.	AF Plate Load.
63	470KΩ	½		BTS-470K	Yl.-Vi.-Yl.	Output Grid.
64	180Ω	½		BW-½-180	Br.-Gray-Br.	Output Cathode.
65	270Ω	2		BW-2-270	Red-Vi.-Br.	Filter.
66	470Ω	2		BW-2-470	Yl.-Vi.-Br.	Filter.
67	220KΩ	½		BTS-220K	Red-Red-Yl.	Line Isolation.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	TELE-TONE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
68	140 VAC Tap @ 117 VAC @ .37A	145 VAC .064ADC			TR-19			

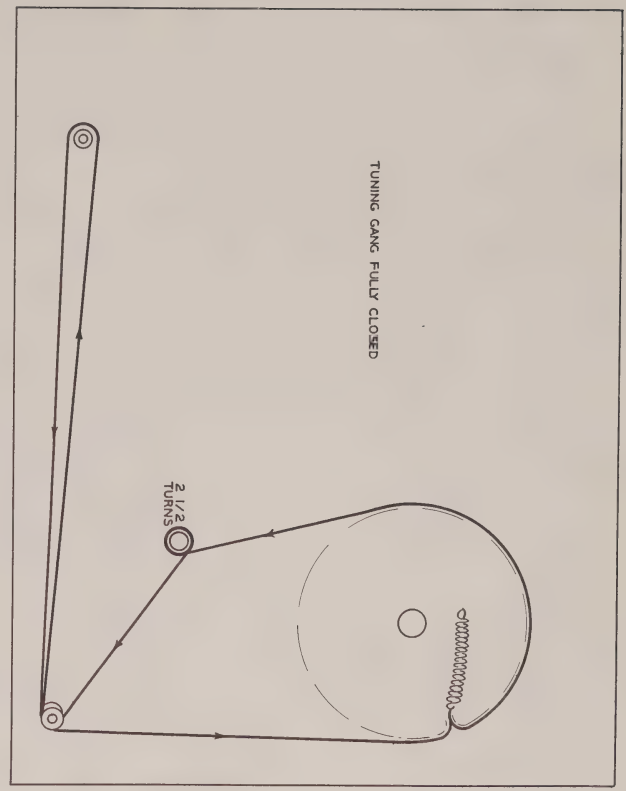
TRANSFORMER (OUTPUT)

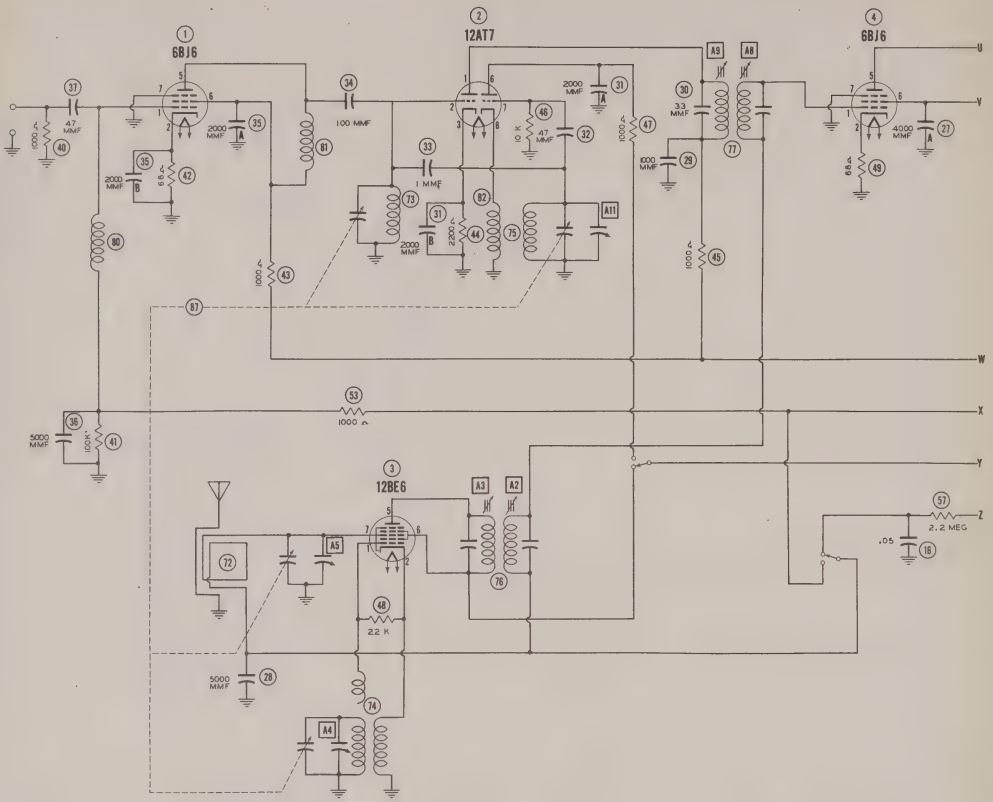
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TELE-TONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
69	3200Ω	3.4Ω	265Ω	.6Ω	TR-10R	A-3876*	T22846 †	A-2998 †	† Bend Mtg. legs down, file out slots and mount on original bracket.

* Rework frame to mount.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TELE-TONE PART No.	JENSEN PART No.	QUAM PART No.	
70	FIELD PM	V.C. IMP. 3.4Ω	SP-41-10B	ST-113 * Mod. P4-X	4A07 *	* Fabricate new Mtg. bracket and remount output transformer.
71	CONE DIA. 4"	V.C. DIA. 9/16"				





IF=455 KC AM

IF=10.7 MC FM

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6BJ6	65KΩ	68Ω	220KΩ	220KΩ	1.8KΩ *	1.8KΩ *	0Ω		
2	12AT7	1.8KΩ *	0Ω	2KΩ	220KΩ	220KΩ	1.8KΩ *	10KΩ	2Ω	220KΩ
3	12BE6	21KΩ	.6Ω	220KΩ	220KΩ	750Ω *	750Ω *	3 Meg.		
4	6BJ6	3 Meg.	68Ω	220KΩ	220KΩ	750Ω *	750Ω *	0Ω		
5	12BA6	120KΩ	0Ω	220KΩ	220KΩ	1.6KΩ *	1.6KΩ *	68Ω		
6A	19T8 ‡	1 Meg.	16KΩ	1 Meg.	220KΩ	220KΩ	0Ω	0Ω	10 Meg.	220KΩ *
6B	19T8	INF	16KΩ	INF	220KΩ	220KΩ	1.2 Meg.	0Ω	10 Meg.	220KΩ *
7	35Z5	170Ω	INF	220KΩ	220KΩ	420KΩ	750Ω *	560Ω *		
8	35W5	INF	INF	220KΩ	220KΩ	40Ω	220KΩ	110KΩ		

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

* Measured from pin 7 of 35W4

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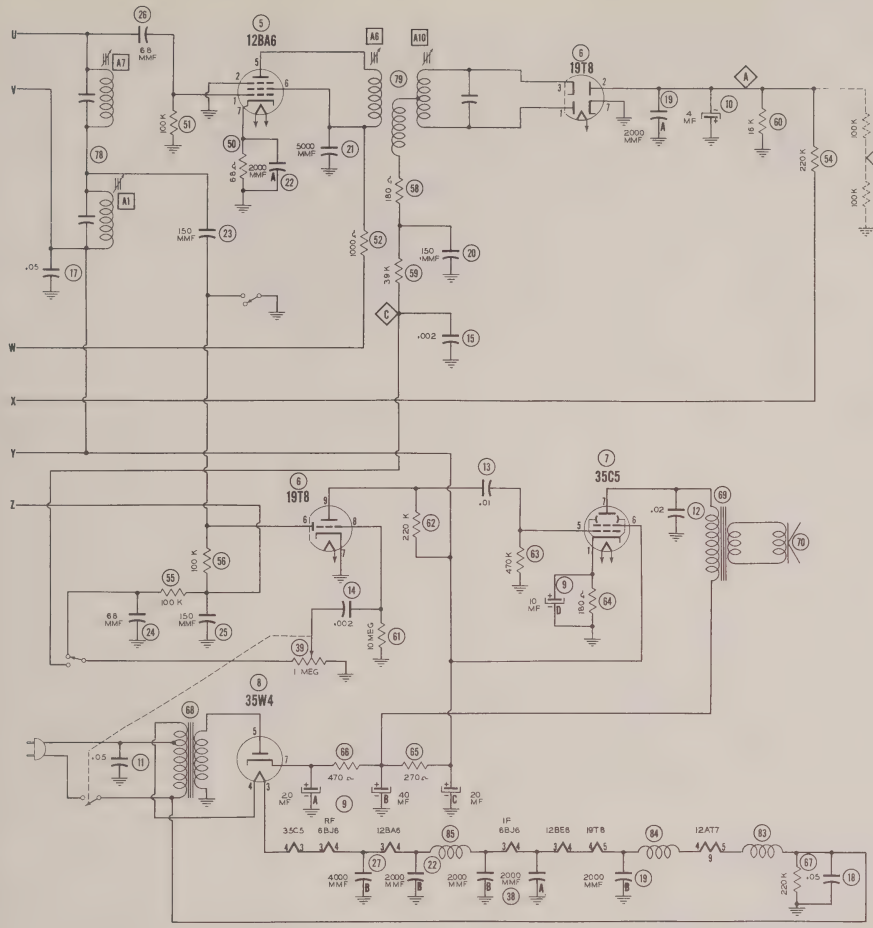

THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6BJ6 #	-.3VDC	.5VDC	7.5VAC	11VAC	90VDC	90VDC	0V		
2	12AT7 #	97VDC	0V	2.3VDC	40VAC	85VAC	95VDC	1-2.2VDC	0V	50VAC
3	12BE6	1-7.8VDC	0V	11VAC	22VAC	113VDC	113VDC	-.1VDC		
4	6BJ6	-.1VDC	.8VDC	11VAC	7VAC	113VDC	113VDC	0V		
5	12BA6 #	0V	0V	7VAC	7.5VAC	87VDC	87VDC	.7VDC		
4A	19T8 #	-.7VDC	1.4VDC	-.7VDC	22VAC	40VAC	0V	0V	-.7VDC	57VDC
4B	19T8	-.7VDC	1.4VDC	-.7VDC	22VAC	40VAC	-1VDC	0V	-.8VDC	60VDC
7	35C5	6.8VDC	0V	11VAC	40VAC	0V	115VDC	116VDC		
8	35W4	0V	0V	40VAC	68VAC	145VAC	70VAC	145VDC		

#TAKEN WITH VACUUM TUBE VOLTMETER.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

For correct pointer setting, turn tuning cap. fully open. Set center of pointer 1 inch from center of tuning control shaft.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	5000MMF	High side to pin 7 12BE6(V3). Low side to chassis.	455KC	AM (Counter-clock-wise).	Tuning cap. fully open.	Across voice coil.	A1,A2, A3	Adjust for maximum output.
2	5000MMF	"	1620KC	"	"	"	A4	Adjust for maximum output.
3	5000MMF	High side to ext. ant. Low side to chassis.	1400KC	"	Tune for max. output.	"	A5	Adjust for maximum output.

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect 2 100KΩ resistors (± 5%) between point A and chassis as shown on schematic. Junction of these two resistors is point B.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4	5000MMF	High side to pin 1 12BA6(V5). Low side to chassis.	10.7MC	FM (Fully clock-wise).	Point of non-interference.	D.C.Probe to point A. Common to chassis.	A6	Adjust for maximum deflection.
5	5000MMF	High side to pin 1 6BJ6(V4). Low side to chassis.	10.7MC	"	"	"	A7	" " "
6	5000MMF	High side to pin 2 12AT7(V2). Low side to chassis.	10.7MC	"	"	"	A8,A9	" " "
7	5000MMF	"	10.7MC	"	"	D.C.Probe to point B. Common to point C.	A10	Adjust for zero reading. A positive or negative reading will be on either side of the correct setting.
8	300Ω carbon resistor	High side to left hand ant. terminal. Low side to right hand ter.	108MC	"	108MC	"	A11	Adjust for maximum deflection.
9	300Ω carbon resistor	"	108MC	"	108MC	"	FM RF coil(73)	Slightly expand or compress coil for maximum deflection.

ALTERNATE FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4	5000MMF	High side to pin 1 12BA6(V5). Low side to chassis.	10.7MC (450 KC sweep).	FM	Set at point of non interference.	Vertical amp. to point A. Low side to chassis.	A6	Disconnect stabilizer capacitor(10). Adjust for maximum amplitude and symmetry as per Fig.1.
5	5000MMF	High side to pin 1 6BJ6(V4). Low side to chassis.	10.7MC (450 KC sweep).	"	"	"	A7	Adjust for maximum amplitude and symmetry as per Fig.1.
6	5000MMF	High side to pin 2 12AT7(V2). Low side to chassis.	10.7MC (450 KC sweep).	"	"	"	A8,A9	Adjust for maximum amplitude and symmetry as per Fig.1. Reconnect stabilizer capacitor.
7	5000MMF	"	10.7MC (450 KC sweep).	"	"	Vertical amp. to point C. Low side to chassis.	A10	Adjust for maximum straightness of crossover line with crossover occurring at center of pattern as per Fig.2. Slightly retouch A6,A7, A8, & A9 for equal amplitude of peaks.

FIG. 1

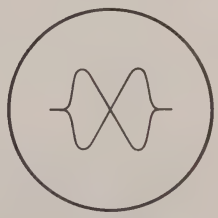
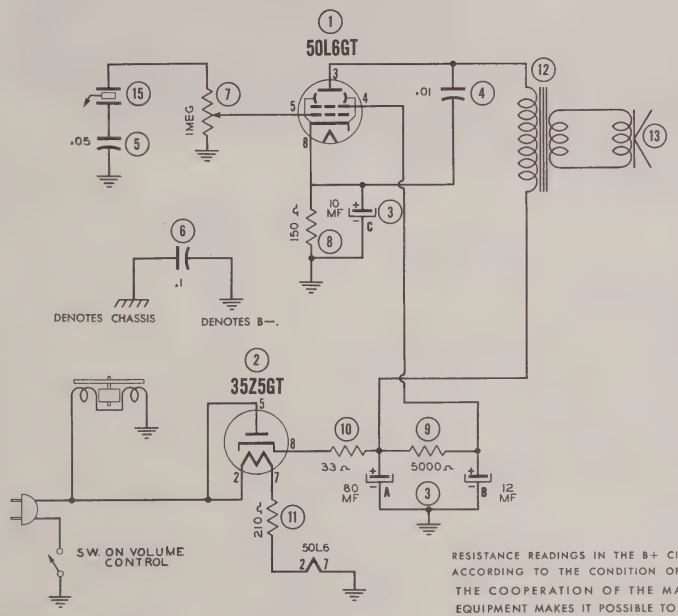


FIG. 2

TRAV-LER MODEL 7014

TRADE NAME	Trav-ler, Models 7000, 7001, 7014
MANUFACTURER	Trav-ler Radio & Television Corp., 571 W. Jackson, Chicago, Illinois.
TYPE SET	AC Operated Phono Player with 2 Tube Amplifier.
TUBES (TWO)	Types 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY RATING	110-125 Volts AC .11 Amp. @ 117 Volts AC



Pin No.	50L6GT Volt.	Res.
1	0V	INF
2	50VAC	48Ω
3	110VDC	60KΩ
4	112VDC	65KΩ
5	0V	1 Meg.
6	0V	INF
7	0V	0Ω
8	6.9VDC	150Ω

Pin No.	35Z5GT Volt.	Res.
1	0V	INF
2	117VAC	300Ω
3	108VAC	250Ω
4	0V	INF
5	117VAC	300Ω
6	0V	INF
7	83VAC	260Ω
8	133VDC	60KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS. THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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497-21

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DATE 4/49 497-21 SET #59 FOLDER 21

TRAV-LER
MODELS 7000, 7001, 7014

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Power Output	50L6GT	50L6GT	7AC	
2	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAV-LER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
3A	80	150	EC-5	*AF886D4A	*EZ53215C	*DY-419	*EL-432	Filter Red.
3B	12	150						" White.
3C	10	25						Cathode Bypass Blue.
4	.01	400	RC-1	484-01	GT4S1	ST-4-01	TC-11	Output Plate Bypass.
5	.05	400	PC-5	484-05	GT4S5	ST-4-05	TC-15	Phono Isolation.
6	.1	400	PC-8	484-1	GT4P1	ST-4-1	TC-1	Line Isolation.

* Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
7A	1 Meg.	½	VC-3	D13-137	AM-63-Z	Volume Control.
B	Shaft		Not req.	E	KSS-3	Attach to 7A per instructions.
C	Switch		" "	41	SW-A	" " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES	
8	150Ω	½	CR-11	BW-½-150	Br.-Grn.-Br.	Output Cathode.
9	5000Ω	½	CR-15	BTS-4700	Grn.-Br.-Red.	Filter.
10	33Ω	½	CR-1		Or.-Or.-Blk.	Surge Limiter.
11	210Ω	5	WR-1	ABA-250		Line dropping. See note.

Note: On IRC replacement, set slider 210Ω from one end.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TRAV-LER PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
12	2000Ω	3.6Ω	176Ω	.6Ω	Part of SPK-11	A-3876 #	T22845 #	A-2922 #	#Bend mounting tabs down, file out slots and mount on original bracket.

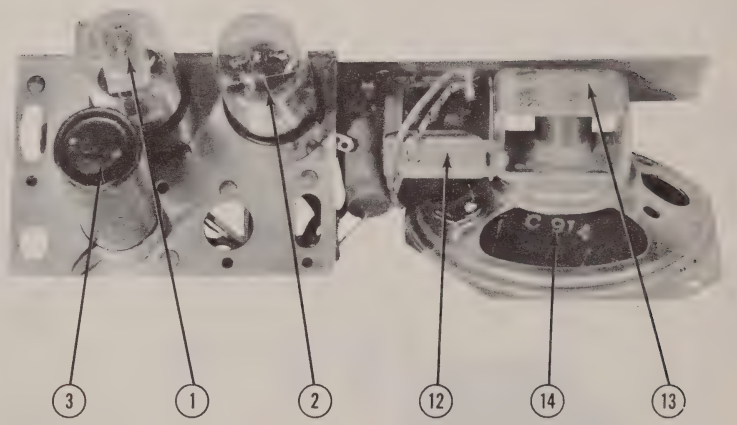
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: TRAV-LER PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V.C. IMP.		ST-113 †		
13	PM	3.6Ω	SPK-11	MOD P4-X	4A07 †	† Trim Flange.
	CONE DIA.	V.C. DIA.				
14	4"	9/16"				

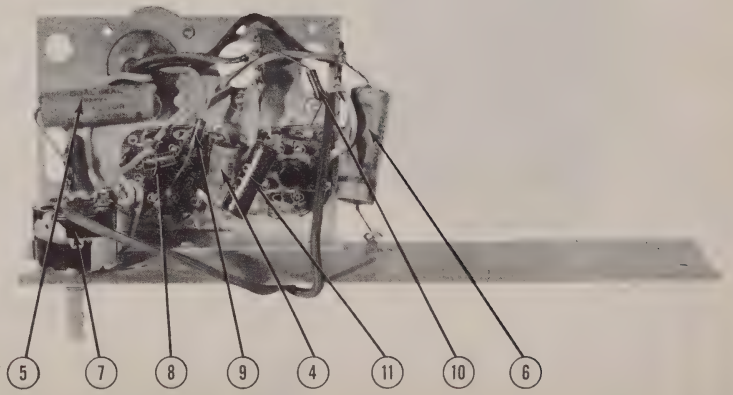
PHONO CARTRIDGE

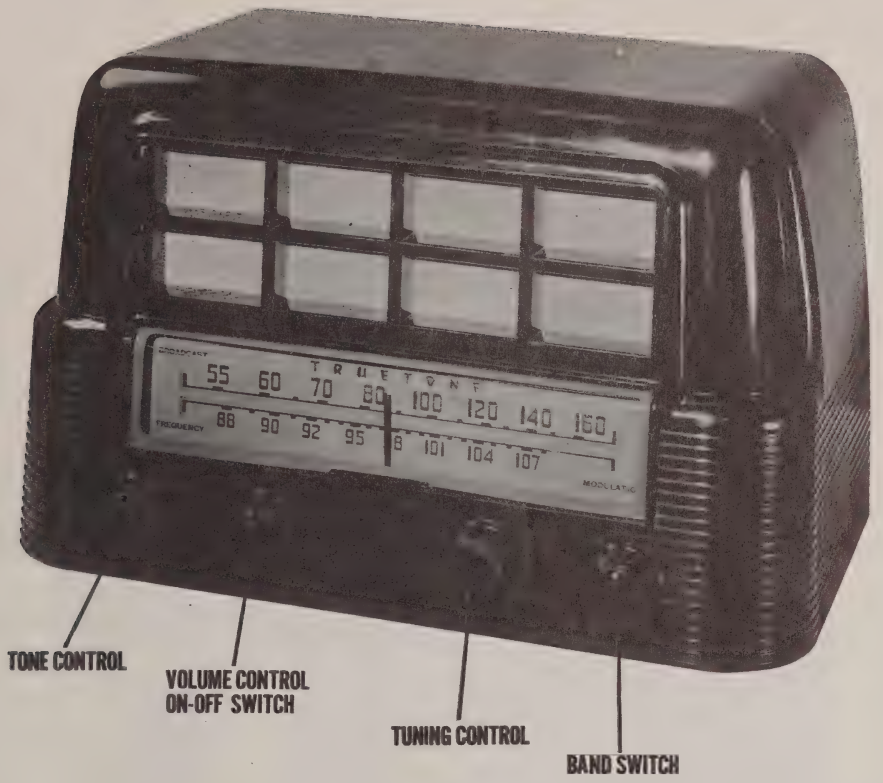
ITEM No.	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
15		L-82-A	

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW





TRUETONE
MODEL D2919

TRUETONE MODEL D2919

TRADE NAME	Truetone, Model D2919 (Fact. # 6DF21)
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES (SIX)	Types 12BA7 Converter, 12BA6 1st IF Amp., 12AU6 2nd FM IF Amp., 12AL5 FM Detector, 12AV6 AM DET.-AVC-AF, 50L6GT Power Output.
POWER SUPPLY	105-125 Volts AC-DC.
RATING	.28 Amp. @ 117 Volts AC.
TUNING RANGE-BROADCAST	535-1620KC FREQ. MOD. 88-108MC.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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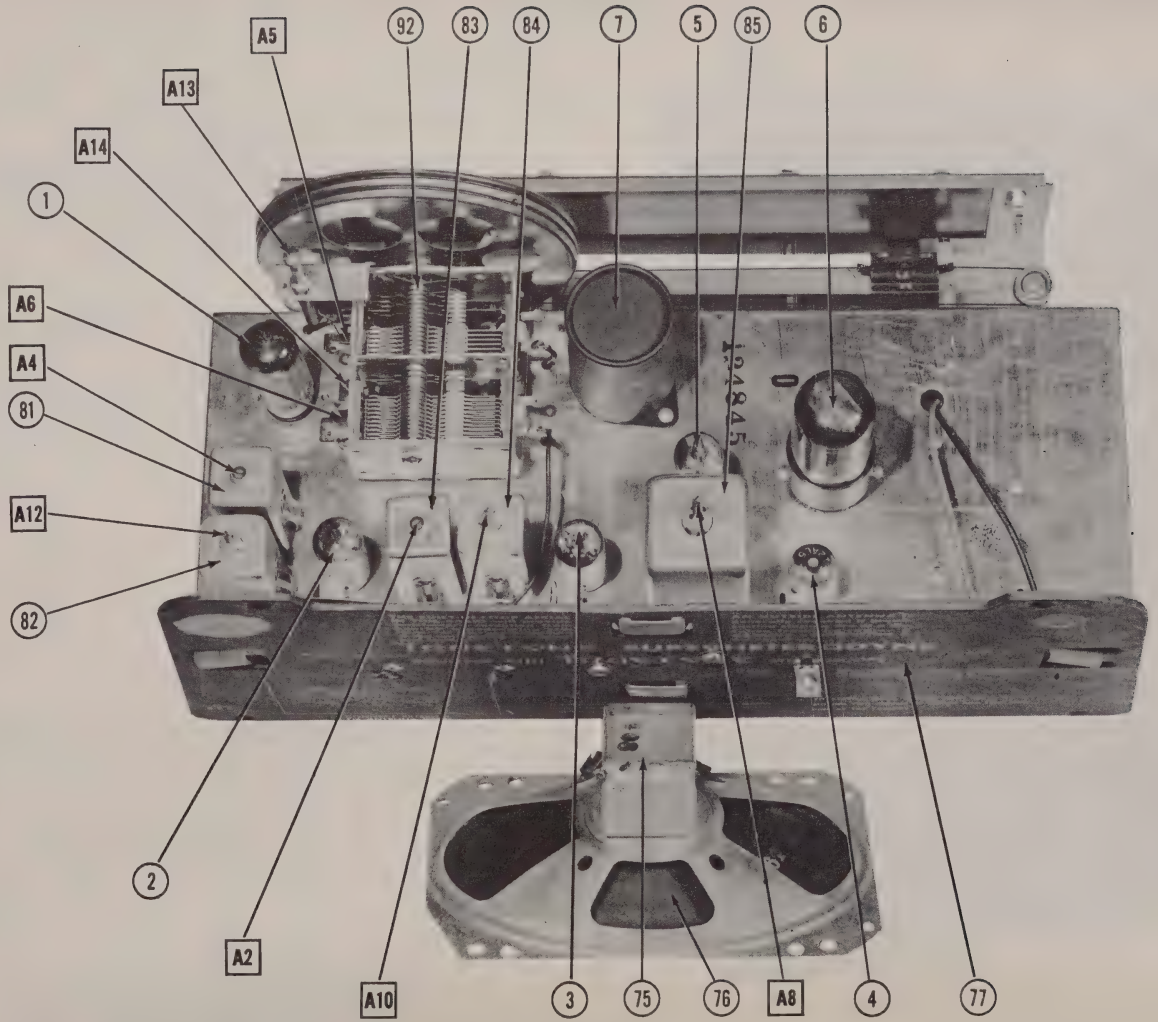
DATE 4/49 497-22 SET #59 FOLDER 22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A2
A10
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76
A8
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77

TRUETONE
MODEL D2919 PAGE 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12BA7	12BA7		
2	1st IF Amp.	12BA6	12BA6	7BK	
3	2nd FM IF Amp.	12AU6	12AU6	7BK	
4	FM Detector	12AL5	12AL5		
5	AM Det.-AVC-AF	12AV6	12AV6		
6	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART. No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	B-8C-15880	AF886D4A	UP443150	DY-401	EL-443	◓ Filter.
B	20	150						■ Filter.
C	20	150						▲ Filter.
D	20	25						Cathode Bypass.
8	5	100	C-8D-16013	PRS 150/4	BR415	M-4-450	UT-41	Stabalizing Cap.
9	.05	400	C-8D-10813	484-05	GT4S5	ST-4-05	TC-15	Line Filter.
10	.15	400	C-8D-10953	484-15	GT4P2	ST-4-2	72P3	Line Isolation.
11	.01	400	C-8D-10761	484-01	GT4S1	ST-4-01	TC-11	Output Plate Bypass.
12	.01	400	C-8D-10761	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling.
13	.01	400	C-8D-10761	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling.
14	.01	400	C-8D-10761	484-01	GT4S1	ST-4-01	TC-11	Tone Compensation.
15	.05	200	C-8D-10813	484-05	GT2S5	ST-4-05	TC-15	AVC Filter.
16	.05	200	C-8D-10770	484-05	GT2S5	ST-4-05	TC-15	" "
17	5000	300	A-8G-13962	1467-005	1D5D5	MW.5-25	1FM-25	RF Bypass.
18	220	300	C-8G-11733	1468-0002	5W5T2	MO.5-32	1FM-32	AF Plate Bypass.
19	2000	300	C-8G-16049	1467-002	1W5D2	MW.5-22	1FM-22	De-emphasis.
20	390	500	C-8F3-120	1468-0004	5W5T4	MO.5-34	1FM-34	Diode Load Cap.
21	330	500	C-8F3-11	1468-00035	5W5T3	MO.5-33	1FM-335	RF Bypass.
22	2000	300	C-8G-16049	1467-002	1W5D2	MW.5-22	1FM-22	2nd IF Decoupling.
23	5000	300	A-8G-13962	1467-005	1D5D5	MW.5-25	1FM-25	" " Cath. Bypass.
24	5000	300	A-8G-13962	1467-005	1D5D5	MW.5-25	1FM-25	RF Bypass.
25	220	300	C-8G-11733	1468-0002	5W5T2	MO.5-32	1FM-32	Diode Filter.
26	220	300	C-8G-11733	1468-0002	5W5T2	MO.5-32	1FM-32	2nd IF Grid Filter.
27	2000	300	C-8G-16049	1467-002	1W5D2	MW.5-22	1FM-22	1st IF Decoupling.
28	5000	300	A-8G-13962	1467-005	1D5D5	MW.5-25	1FM-25	" " Cath. Bypass.
29	5000	300	A-8G-13962	1467-005	1D5D5	MW.5-25	1FM-25	" " Grid Filter.
30	5000	300	A-8G-13962	1467-005	1D5D5	MW.5-25	1FM-25	Conv. Decoupling.
31	5000	300	A-8G-13962	1467-005	1D5D5	MW.5-25	1FM-25	RF Bypass.
32	5000	300	A-8G-13962	1467-005	1D5D5	MW.5-25	1FM-25	Osc. Anode Decoup.
33	30	300	C-8G-12152	1468-000025	5W5S3	MOS.5-43	MS-43	Fixed Trimmer.
34	47	300	C-8G-12195	1468-00005	5W5S5	MO.5-45	1FM-45	Osc. Grid Cap.
35	47	300	C-8G-12198	1468-00005	5W5S5	MO.5-45	1FM-45	RF Bypass.
36	5	300	A-8G-12495-6	1468-000005	5W5V5	MO.5-55	MS-55	Osc. Feedback.
37	100	500	C-8F3-113	1469-0001	5R5T1	MOS.5-31	MS-31	Fixed Padder.
38	820	500	C-8F3-124		2R5T8		MS-38	Isolation.
39	820	500	C-8F3-124		2R5T8		MS-38	Fixed Padder.
40	820	500	C-8F3-124		2R5T8		MS-38	Isolation.
41	10	300	C-8G-12199	1468-00001	5W5Q1	MO.5-41	MS-41	Ant. Coupling.
42	220	300	C-8G-11733	1468-0002	5W5T2	MO.5-32	1FM-32	" "
43	220	300	C-8G-11733	1468-0002	5W5T2	MO.5-32	1FM-32	Ant Isolation.
44	5000	300	A-8G-13962	1467-005	1D5D5	MW.5-25	1FM-25	RF Bypass.
45	5000	300	A-8G-13962	1467-005	1D5D5	MW.5-25	1FM-25	Filament Bypass.
46	5000	300	A-8G-13962	1467-005	1D5D5	MW.5-25	1FM-25	" "
47	100	500	C-8F3-113	1468-0001	5W5T1	MO.5-31	1FM-31	RF Bypass.
48	68	300	C-8G-10648	1468-000075	5W5Q7	MOS.5-47	MS-47	Filament Bypass.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
49A	1 Meg.	½	A10A-15853	D13-137	AM-63-Z	Volume Control.
B	Shaft		Not Req.	E	KS8-3	Attach to 49A per instructions.
C	Switch		" "	41	SW-A	" " " "
50A	1 Meg.	½	A11B-15852	D13-137	AM-63-Z	Tone Control.
B	Shaft		Not Req.	E	KS8-3	Attach to 50A per instructions.

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
90	Switch	B-20A-16003	Band
91	Rectifier	A-21J-12775	Selenium
92	2 Gang Var. Cap.	B-8A-15843	(20-482MMF, 32-211MMF)
A13	Trimmer	A-20I-15142	FM Oscillator Adjustment.
	Dial Crystal	B-6A-16062	
	Dial Pointer	B-2G-16005	
	Cabinet	5C-13180-36	
	Knob	B-5B-11131-41	Plain.
	Knob	B-5B-16057-41	With Dot.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.		
51	22KΩ	½	C-9B1-78	BTS-22K	Red-Red-Or.	Oscillator Grid.
52	470Ω	½	C-9B1-58	BTS-470	Yl.-Vi.-Br.	Converter Plate Decoupling.
53	820Ω	½	C-9B1-61	BTS-820	Gray-Red-Br.	Oscillator Anode Decoupling.
54	3.3 Meg.	½	C-9B1-34	BTS-3.3 Meg.	Or.-Or.-Grn.	AVC Network.
55	68Ω	½	C-9B1-48		Blue-Gray-Blk.	1st IF Cathode.
56	470Ω	½	C-9B1-58	BTS-470	Yl.-Vi.-Br.	" " Decoupling.
57	47KΩ	½	C-9B1-82	BTS-47K	Yl.-Vi.-Or.	Diode Filter.
58	2.2 Meg.	½	C-9B1-33	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network.
59	150KΩ	½	C-9B1-26	BTS-150K	Br.-Grn.-Yl.	2nd IF Grid.
60	68Ω	½	C-9B1-48		Blue-Gray-Blk.	" " Cathode.
61	470Ω	½	C-9B1-58	BTS-470	Yl.-Vi.-Br.	" " Decoupling.
62	27KΩ	½	C-9B1-79	BTS-27K	Red-Vi.-Or.	De-emphasis.
63	22KΩ	½	C-9B1-78	BTS-22K	Red-Red-Or.	Ratio Det. Diode Load.
64	6.8 Meg.	½	C-9B1-36	BTS-6.8 Meg.	Blue-Gray-Grn.	AF Grid.
65	470KΩ	½	C-9B1-94	BTS-470K	Yl.-Vi.-Yl.	" Plate Load.
66	470KΩ	½	C-9B1-94	BTS-470K	Yl.-Vi.-Yl.	Output Grid.
67	150Ω	½	C-9B1-52	BW-½-150	Br.-Grn.-Br.	" Cathode.
68	1200Ω	2	C-9B4-63	BT-2-1200	Br.-Red-Red.	Filter.
69	180Ω	1	C-9B2-53	BW-1-180	Br.-Gray-Br.	"
70	22Ω	2	C-9C4-1079		Red-Red-Blk.	Rectifier Ballast.
71	56Ω	2	C-9C4-1084	BW-2-56	Grn.-Blue-Blk.	Line Dropping.
72	1800Ω	½	C-9B1-65	BTS-1800	Br.-Gray-Red.	Filament Shunt.
73	220KΩ	½	C-9B1-27	BTS-220K	Red-Red-Yl.	Line Isolation.

TRANSFORMER (OUTPUT)

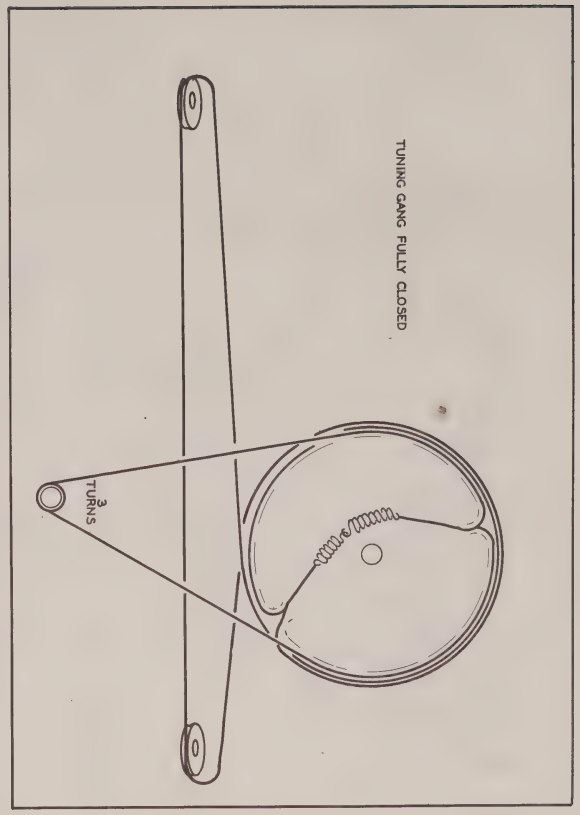
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
74	2100Ω	3.0Ω	145Ω	.4Ω	B-18A-16024	A-3876	T22S45	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	
75	FIELD	V.C. IMP.	B-18A-16024		46A15	
	PM	3.0Ω				
	CONE DIA.	V.C. DIA.				
76	4 X 6"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
77	AM Loop Ant		1.2Ω	C-13E-16028		
78	FM Ant.Coil		0Ω	A-13E-16032		
79	AM Osc.Coil	1.2Ω	4.8Ω	B-13D-16002	14-1060	
80	FM Osc.Coil		0Ω	A-13D-16031		
81	AM 1st IF	11Ω	11.5Ω	B-13A-16301		
82	FM 1st IF	1Ω	1Ω	B-13A-15999		
83	AM 2nd IF	14Ω	14Ω	B-13B-16302		
84	FM 2nd IF	1Ω	1Ω	B-13B-16000		
85	Ratio Det.	.8Ω	.1Ω	B-13M-16001		
86	Parasitic Supp. Chk.		0Ω	A-16M-16035		2 turns around 10Ω resistor.
87	RF Choke		.2Ω	A-16B-16023		
88	Fil.Choke		.2Ω	A-16B-16023		
89	" "		.2Ω	A-16B-16023		



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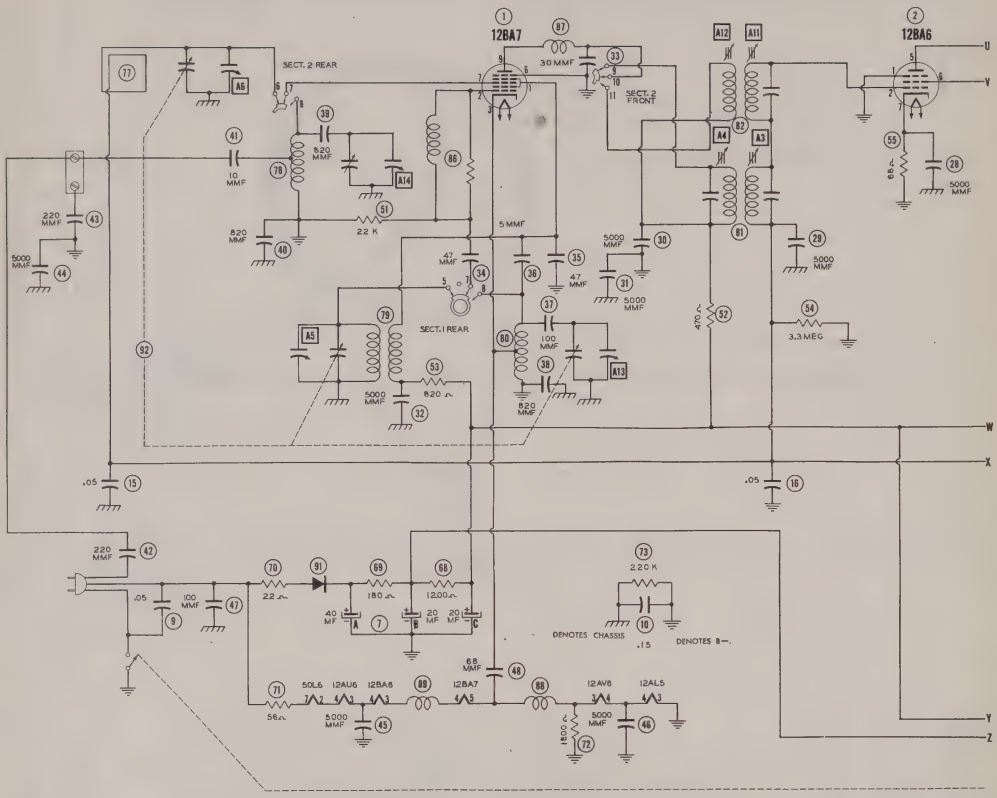

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
1	12BA7	85VDC	-.4VDC	0V	35VAC	22VAC	0V	-3.4VDC	85VDC	90VDC
2	12BA6	-.5VDC	0V	35VAC	47VAC	87VDC	87VDC	.6VDC		
3	12AU6*	-.4VDC	0V	47VAC	56VAC	90VDC	90VDC	.3VDC		
4	12AL5*	-.4VDC	-.4VDC	0V	10VAC	0V	0V	-.6VDC		
5	12AV6	-.5VDC	0V	22VAC	10VAC	0V	-.3VDC	50VDC		
6	50L6GT	0V	56VAC	117VDC	120VDC	0V	0V	108VAC	6VDC	

*TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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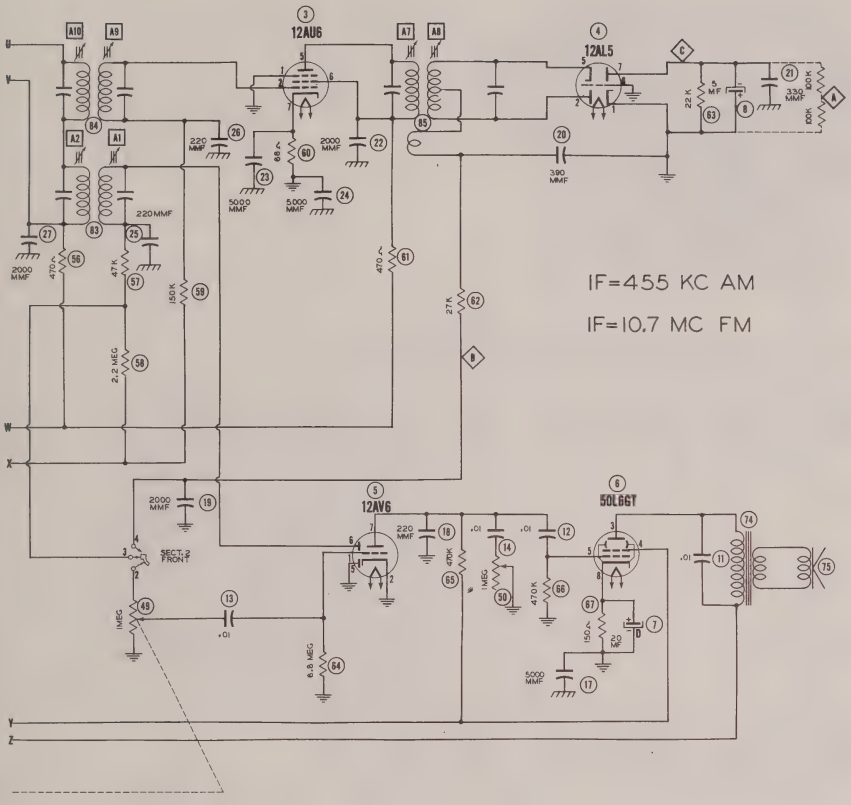

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	PIN 9
1	12BA7	*2KΩ	22KΩ	0Ω	36Ω	2KΩ	0Ω	1.6 Meg.	*2KΩ	*2KΩ
2	12BA6	1.6 Meg.	0Ω	36Ω	48Ω	*2KΩ	*2K Ω	68Ω		
3	12AU6‡	3.4 Meg.	0Ω	48Ω	60Ω	*2KΩ	*2KΩ	68Ω		
4	12AL5‡	1.2 Meg.	1.2 Meg.	0Ω	12Ω	0Ω	Inf.	22K Ω		
5	12AV6	6.8 Meg.	0Ω	25Ω	12Ω	0Ω	1 Meg.	*470KΩ		
6	50L6GT	Inf.	60Ω	*340Ω	*1.4MΩ	470KΩ	0Ω	100Ω	150Ω	

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.
* Measured from junction of items 91 and 69

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer set left hand edge of pointer saddle to extreme left hand limit. Calibration marks back row are as follows: extreme left hand limit, 600KC, 1000KC, 1400KC, 1600, extreme right hand limit, front row (FM): extreme left hand limit, 88MC, 89MC, 98MC 108MC, extreme right hand limit.

Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to pin 1 12BA6 IF Amp. (V3). Low side to B-.	455KC	AM (Counter-clock-wise)	Tuning cap. fully open.	Across voice coil	A1,A2	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2	.1 MFD	High side to pin 7 12BA7 Conv.(V2) Low side to B-.	455KC	"	"	"	A3,A4	" "
3	200 MMF	High side to AM Ant. clip. Low side to B-.	1620KC	"	1620KC	"	A5	Adjust for maximum output
4	200 MMF	"	1400KC	"	Tune for maximum output.	"	A6	Adjust for maximum output. Check calibration at 1000KC. 600KC, 535KC.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Remove built-in antenna lead if connected from FM antenna terminal strip.

In step 6 temporarily connect two 100KΩ matched resistors in series (± 5%) from pin 7 of 12AL5(V4) to pin 5 (B-). Connect common lead of VTVM to junction of the 100KΩ resistors (Point A), DC Probe to Point B.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5	.1 MFD	High side to pin 1 12AU6(V3). Low side to B-.	10.7MC	FM (Clock-wise)	Set at point of min. interference.	D C Probe to point C. Common to B-.	A7	Adjust for maximum deflection.
6	.1 MFD	"	10.7MC	"	"	DC Probe to point B. Common to point A.	A8	Adjust for zero reading. Positive & negative readings are on either side of the correct setting.
7	.1 MFD	High side to pin 1 12BA6(V2). Low side to B-.	10.7MC	"	"	D C Probe to point C. Common to B-.	A9,A10	Adjust for maximum deflection.
8	.1 MFD	High side to pin 7 12BA7(V1). Low side to B-.	10.7MC	"	"	D C Probe to point C. Common to B-.	A11,A12	Adjust for maximum deflection. Remove two 100KΩ resistors.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
5	5000 MMF	High side to pin 1 12AU6(V3). Low side to B-.	10.7MC (450KC sweep)	FM	Set at point of non-interference.	High side to point C. Low side to B-.	A7,A8	Disconnect 5 MFD stabalizing cap. (8). Adjust for maximum amplitude & symmetry per Fig.1.
6	5000 MMF	High side to pin 1 12BA6(V2). Low side to B-.	10.7MC (450KC sweep)	"	"	"	A9,A10	Adjust for maximum amplitude and symmetry per Fig.1.
7	5000 MMF	High side to pin 7 12BA7(V1). Low side to B-.	10.7MC (450KC sweep)	"	"	"	A11, A12	Adjust for maximum amplitude and symmetry per Fig.1. Reconnect stabalizing capacitor.
8	5000 MMF	"	10.7MC (450KC sweep)	"	"	High side to point B. Low side to B-.	A7,A8	Adjust A8 for maximum straightness of cross-over line with crossover point occurring at center of pattern as per Fig.2. Adjust A7 for equal amplitude of peaks.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9	300Ω carbon resistor	High side to left hand ant. terminal. Low side to right hand terminal.	108MC	FM	108MC	D C Probe to point C. Common to B-.	A13	Adjust for maximum deflection.
10	300Ω carbon resistor	"	98MC	"	Tune for maximum deflection.	"	A14	" "

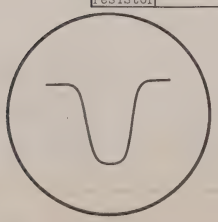
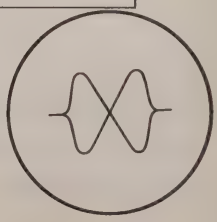
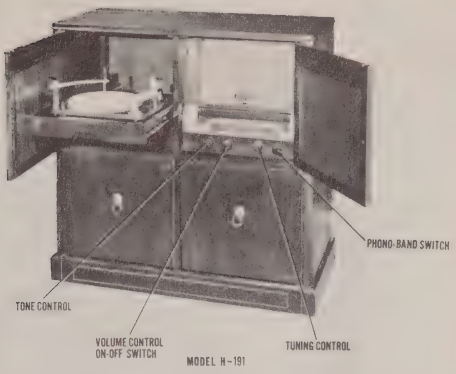


FIG. 1

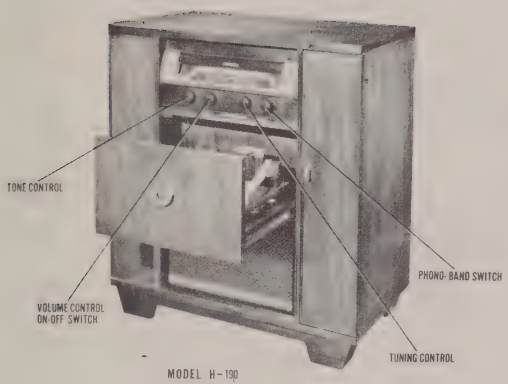
FIG. 2



WESTINGHOUSE
MODELS H-190, H-191, H-191A, H-220



MODEL H-191



MODEL H-190

WESTINGHOUSE
MODELS H-190, H-191, H-191A, H-220

WESTINGHOUSE MODEL H-190

TRADE NAME	Westinghouse, Models H-190, H-191, H-191A, H-220 (Ch. V-2134)
MANUFACTURER	Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES(EIGHT)	Types 6J6 Converter, 6BA6 1st IF Amp., 6BA6 2nd IF Amp., 6AU6 FM Limiter, 6AL5 FM Detector, 6AV6 AM DET-AVC-AF, 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-120 Volts RATING .69 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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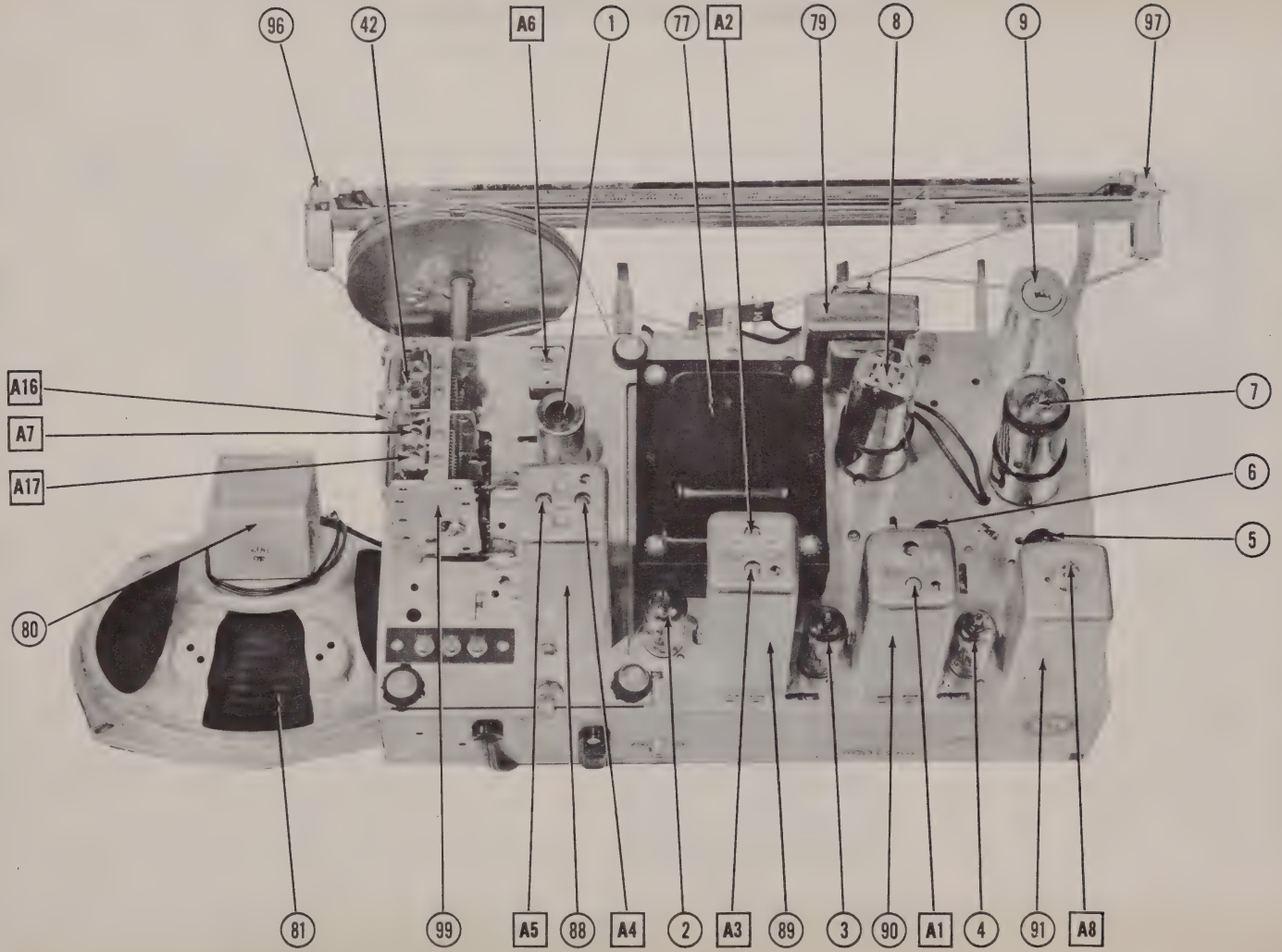
DATE 4/49 497-23 SET #59 FOLDER 23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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	6J6	6J6	7BF	
2	1st IF Amp.	6BA6	6BA6	7BK	
3	2nd IF Amp.	6BA6	6BA6	7BK	
4	FM Limiter	6AU6	6AU6	7EK	
5	FM Detector	6AL5	6AL5	6BT	
6	AM Det.-AVC-AF	6AV6	6AV6		
7	Power Output.	6V6GT	6V6GT	7AC	
8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WESTINGHOUSE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	24	400	V-5821		UP2245	DY-2X20-450	EL-220	■ Filter.
B	24	400						▲ Filter.
10	20	25	V-3236	PRS25-25	BR202A	M-25-25	TA-25	Cathode Bypass.
11	4	450	V-4885	PRS150-4	BR415	M-4-450	UT-41	Stabalizing Cap.
12	10	350	V-5985	PRS450-10	BR1045	M-10-350	UT123	Decoupling.
13A	.01	600	V-4634	684-01	GT6S1	ST-6-01	TC-11	Line Filter.
B	.01	600		684-01	GT6S1	ST-6-01	TC-11	Line Filter.
14	.005	600	RCP10M650 2A	684-005	GT6D5	ST-6-005	TC-25	Output Plate Bypass.
15	.01	400	RCP10W4103A	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling.
16	.01	400	RCP10W4103A	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling.
17	.01	400	RCP10W4103A	484-01	GT4S1	ST-4-01	TC-11	Audio Coupling.
18	.05	200	RCP10W2503M	484-05	GT2S5	ST-4-05	TC-15	Tone Compensation.
19	.01	600	V-5040-15	684-01	GT6S1	ST-6-01	TC-11	RF Bypass Pwr. Supply.
20	.03	400	RCP10W4303M	484-03	GT4S3	ST-6-03	TC-13	AF Plate Decoupling.
21	.005	600	V-5040-11	684-005	GT6D5	ST-6-005	TC-25	Limiter Screen Bypass.
22	.01	600	V-5040-15	684-01	GT6S1	ST-6-01	TC-11	" Plate Decoup.
23	.01	600	V-5040-15	684-01	GT6S1	ST-6-01	TC-11	2nd IF Decoupling.
24	.005	600	V-5040-11	684-005	GT6D5	ST-6-005	TC-25	" " Screen Bypass.
25	.01	600	V-5040-15	684-01	GT6S1	ST-6-01	TC-11	1st IF Decoupling.
26	.005	600	V-5040-11	684-005	GT6D5	ST-6-005	TC-25	" " Screen Bypass.
27	.01	600	V-5040-15	684-01	GT6S1	ST-6-01	TC-11	AVC Filter.
28	.02	400	RCP10W4203A	484-02	GT4S2	ST-4-02	TC-12	AVC Filter.
29	.01	200	V-5040-13	484-01	GT2S1	ST-4-01	TC-11	Filament Bypass.
30	150	500	RCM20A151M	1468-00015	5W5T15	MO.5-315	1FM-315	AF Plate Bypass.
31	680	300	R5CC25Z Y681M	1468-00075	1W5T7	MO.5-37	1FM-37	Tone Compensation.
32	470	300	RCM20A471M	1468-0005	5W5T5	MO.5-35	1FM-35	Tone Compensation.
33	150	500	RCM20A151J	1468-00015	5W5T15	MO.5-315	1FM-315	Ratio Det. Load Cap. Note
34	150	500	RCM20A151J	1468-00015	5W5T15	MO.5-315	1FM-315	Ratio Det. Load Cap. Note
35	1000	300	RCP10W6102A	1468-001	1W5D1	MO.3-21	1FM-21	De-emphasis.
36	47	500	RCM20A47UM	1468-00005	5W5Q5	MO.5-45	1FM-45	Limiter Grid Filter.
37	100	500	RCM20A101M	1468-0001	5W5T1	MO.5-31	1FM-31	AM Diode RF Filter.
38	100	500	RCM20A101M	1468-0001	5W5T1	MO.5-31	1FM-31	" " " "
39	470	300	R5CC20Z Y471M	1468-0005	5W5T5	MO.5-35	1FM-35	RF Bypass.
40	22	500	RCM20B220K	1468-000025	5W5Q25	MOS.5-42	MS-42	Converter Plate Bypass.
41	47	300	R3CC21SL47UK	1468-00005	5W5Q5	MO.5-45	1FM-45	Oscillator Grid Cap.
42	6	300	R3CC20VK060G					Fixed Trimmer.
43	5000	300	V-5596	1467-005	1D5D5	MW.5-25	1FM-25	RF Bypass.
44	47	300	R3CC21SL47UK	1468-00005	5W5Q5	MO.5-45	1FM-45	RF Coupling.
45	5000	300	V-5596	1467-005	1D5D5	MW.5-25	1FM-25	Filament Bypass.
46	5000	300	V-5596	1467-005	1D5D5	MW.5-25	1FM-25	" "

Note If either item number 33 or 34 is replaced with a capacitor of different value the other must be replaced with a capacitor of the same value.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTING. PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
47A	500KΩ	½	V-5791	D18-133X	T-88	Volume Control.
B	Shaft		Not Req.	A	Not Req.	Attach to 47A per instructions.
C	Switch		" "	41	SW-A	" " "
48A	2 Meg.	½	V-5790	D13-139	M-66-Z	Tone Control.
B	Shaft		Not Req.	A	Not Req.	Attach to 48A per instructions.

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: MEISSNER PART No.	
82A	Loop Ant.		0Ω	V-5982-1		Model H-190
B	Loop Ant.			V-5875-1		Models H-191,H-191A.
83A	FM Dipole.		0Ω	V-5986-1		Model H-190.
B	FM Dipole.			V-5986-2		Models H-191, H-191A.
84	Ant. Load Coil.		2Ω	V-5803		
85	FM Ant.Coil		0Ω	V-4674		
86	BC Osc.Coil		9.5Ω	V-5804	14-1060	
87	FM Osc.Coil		0Ω	V-6076		
88A	1st IF AM		6.9Ω *	V-4627		*Includes resistance of both Sec.
B	1st IF FM					
89A	2nd IF AM	‡ 6	5.8Ω *	V-4628		‡Includes resistance of both Pri.
B	2nd IF FM					
90A	3rd IF AM	‡ 9.8Ω	11.9Ω	V-4629		
B	3rd IF FM		.9Ω			
91	FM Ratio Det.	.8Ω	.1Ω	V-5796		
92	Fil. Choke		0Ω	V-4886-3		
93	Fil. Choke		0Ω	V-4886-3		
94	Fil. Choke		0Ω	V-4886-3		
95	Par. Choke		0Ω	V-4886-7		Wound on 22Ω resistor.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: WESTINGHOUSE PART No.		NOTES
96	Bayonet	6-8V	0.25A	Blue			Type #44.
97	"	6-8V	0.25A	"			" #44.

MISCELLANEOUS

ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
98	Switch	V-5806	Band
99	2 Gang Var. Cap.	V-5802	(45-545MMF, 10-190MMF).
A6	Trimmer	V-4672	AM Oscillator Adjustment.
	Dial	V-5820	
	Dial Pointer	V-5793	
	Knob Assembly.	V-3667-7	Band Switch.
	Knob Assembly.	V-3667-5	Tone-Volume-Tuning.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	WESTINGHOUSE PART No.	IRC PART No.		
49	2200Ω	½	RC10AE222M	BTS-2200	Red-Red-Red.	Antenna Loading.
50	1 Meg.	½	RC10AE105M	BTS-1 Meg.	Br.-Blk.-Grn.	Converter Grid.
51	68KΩ	½	RC10AE683K	BTS-68K	Blue-Gray-Or.	Converter Plate Load.
52	22KΩ	½	RC10AE223K	BTS-22K	Red-Red-Or.	Oscillator Grid.
53	18KΩ	1	RC30AE183K	BTA-18K	Br.-Gray-Or.	Converter Decoupling.
54	1 Meg.	½	RC10AE105M	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network.
55	150KΩ	½	RC10AE154M	BTS-150K	Br.-Grn.-Yl.	Diode Load.
56	150KΩ	½	RC10AE154M	BTS-150K	Br.-Grn.-Yl.	" "
57	68Ω	½	RC10AE680K		Blue-Gray-Blk.	1st IF Cathode, See Note.
58	33KΩ	1	RC30AE333K	BTA-33K	Or.-Or.-Or.	" " Screen.
59	3300Ω	1	RC30AE332K	BTA-3300	Or.-Or.-Red.	" " Decoupling.
60	2.2 Meg.	½	RC10AE225M	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network.
61	68Ω	½	RC10AE680K		Blue-Gray-Blk.	2nd IF Cathode.
62	33KΩ	1	RC30AE333K	BTA-33K	Or.-Or.-Or.	" " Screen.
63	3300Ω	1	RC30AE332K	BTA-3300	Or.-Or.-Red.	" " Decoupling.
64	47KΩ	½	RC10AE473M	BTS-47K	Yl.-Vi.-Or.	Diode Filter.
65	100KΩ	½	RC10AE104K	BTS-100K	Br.-Blk.-Yl.	Limiter Grid.
66	150KΩ	½	RC20AE154K	BTS-150K	Br.-Grn.-Yl.	" Screen.
67	10KΩ	1	RC30AE103K	BTA-10K	Br.-Blk.-Or.	" Decoupling.
68	220Ω	½	RC10AE221M		Red-Red-Br.	RF Filter.
69	68KΩ	½	RC10AE683M	BTS-68K	Blue-Gray-Or.	De-emphasis.
70	15KΩ	½	RC10AE153K	BTS-15K	Br.-Grn.-Or.	Ratio Detector Diode Load.
71	1500Ω	½	RC10AE152M	BTS-1500	Br.-Grn.-Red.	Tone Compensation.
72	10 Meg.	½	RC10AE106M	BTS-10 Meg.	Br.-Blk.-Blue.	AF Grid.
73	470KΩ	½	RC10AE474K	BTS-470K	Yl.-Vi.-Yl.	" Plate Load.
74	150KΩ	½	RC10AE154M	BTS-150K	Br.-Grn.-Yl.	" " Decoupling.
75	470KΩ	½	RC10AE474K	BTS-470K	Yl.-Vi.-Yl.	Output Grid.
76	270Ω	1	RC30AE271K	BW-1-270	Red-Vi.-Br.	" Cathode.

Note: Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	WESTINGHOUSE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
77	117VAC @ .69A	600VCT @.09ADC	@ 5.2VAC @ 2.0A	@ 6.6VAC @ 2.75A	V-5797	P-6013 #	T22R05	P-8952 #

FILTER CHOKE

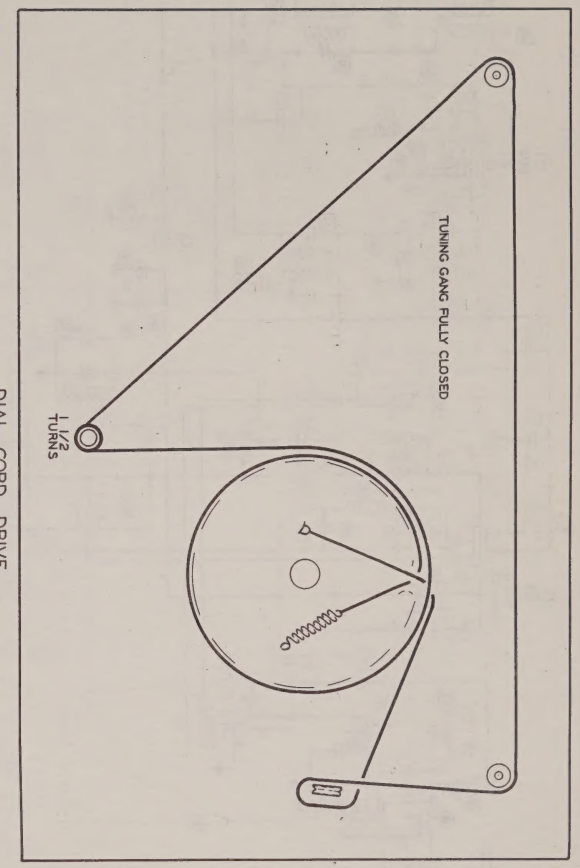
ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	WESTING-HOUSE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
78	.09A	210Ω	3.5HY	V-5794			C-2977	

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WESTINGHOUSE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
79	17500	3.7Ω	400Ω	.4Ω	V-5798	A-3823	T22S87	A-2902	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			WESTINGHOUSE PART No.	JENSEN PART No.	QUAM PART No.	
80A	FIELD	V.C. IMP.	V-5981	ST-116 MOD P8-V	8A31	Used on Model H-190.
	PM	3.7Ω				
81A	CONE DIA.	V.C. DIA.				
	7 1/4"	3/4"				
80B	FIELD	V.C. IMP.	V-5571	ST-119 † MOD P10-T	10A31	Used on Models H-191, H-191A. † Replace output transformer to match 6-8Ω voice coil.
	PM	3.3Ω				
81B	CONE DIA.	V.C. DIA.				
	9 3/8"	3/4"				



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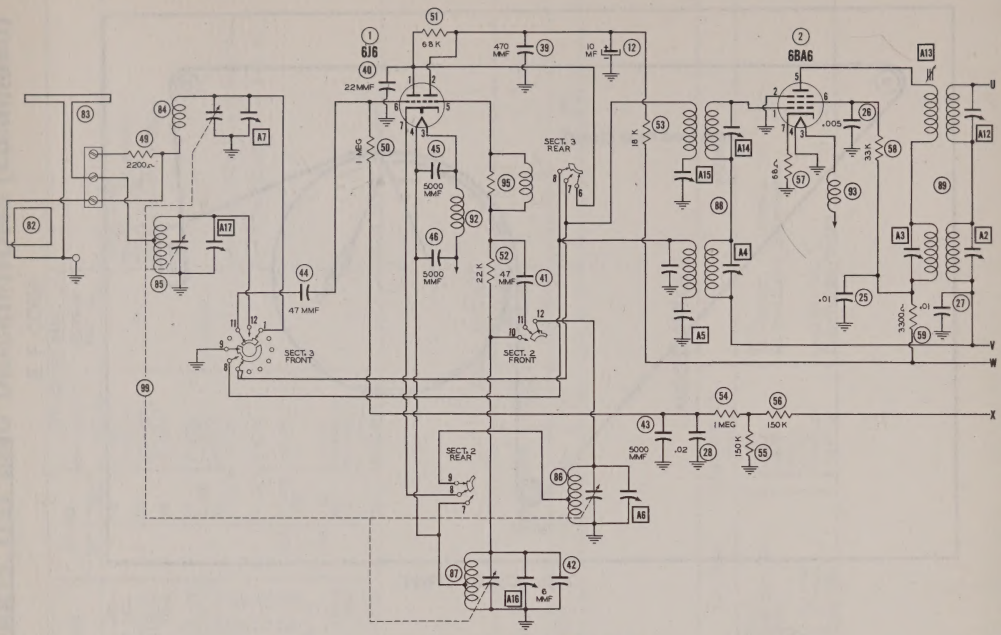

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1A	6J6	50VDC	115VDC	6.6VAC	0V	1-8.8VDC	-8.7VDC	0V	
‡ 1B	6J6	50VDC	105VDC	6.6VAC	0V	1-8.8VDC	-.6VDC	0V	
2	6BA6	-.5VDC	0V	6.6VAC	0V	235VDC	95VDC	0V	
3	6BA6	-.5VDC	0V	0V	6.6VAC	240VDC	105VDC	1VDC	
‡ 4	6AU6	-.7VDC	0V	0V	6.6VAC	250VDC	60VDC	0V	
‡ 5	6AL5	.6VDC	0V	6.6VAC	0V	0V	0V	15VDC	
6	6AV6	-.5VDC	0V	6.6VAC	0V	0V	0V	90VDC	
7	6V6GT	0V	6.6VAC	280VDC	280VDC	0V	230VDC	0V	15VDC
8	5Y3GT	0V	300VDC	0V	300VAC	6.6VAC	300VAC	6.6VAC	300VDC

‡TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1A	6J6	180KΩ	100KΩ	.1Ω	0Ω	22KΩ	2 Meg.	1Ω	
‡ 1B	6J6	180KΩ	100KΩ	.1Ω	0Ω	22KΩ	2 Meg.	0Ω	
2	6BA6	2.5 Meg.	0Ω	.1Ω	0Ω	94KΩ	130KΩ	0Ω	
3	6BA6	2.5 Meg.	0Ω	0Ω	.1Ω	94KΩ	130KΩ	6Ω	
‡ 4	6AU6	100KΩ	0Ω	0Ω	.1Ω	100KΩ	250KΩ	0Ω	
‡ 5	6AL5	15KΩ	0Ω	.1Ω	0Ω	570KΩ	0Ω	570KΩ	
6	6AV6	10 Meg.	0Ω	.1Ω	0Ω	350KΩ	0Ω	700KΩ	
7	6V6GT	0Ω	.1Ω	90KΩ	90KΩ	470KΩ	250KΩ	0Ω	27Ω
8	5Y3GT	Inf.	90KΩ	Inf.	85Ω	.1Ω	90Ω	.1Ω	90KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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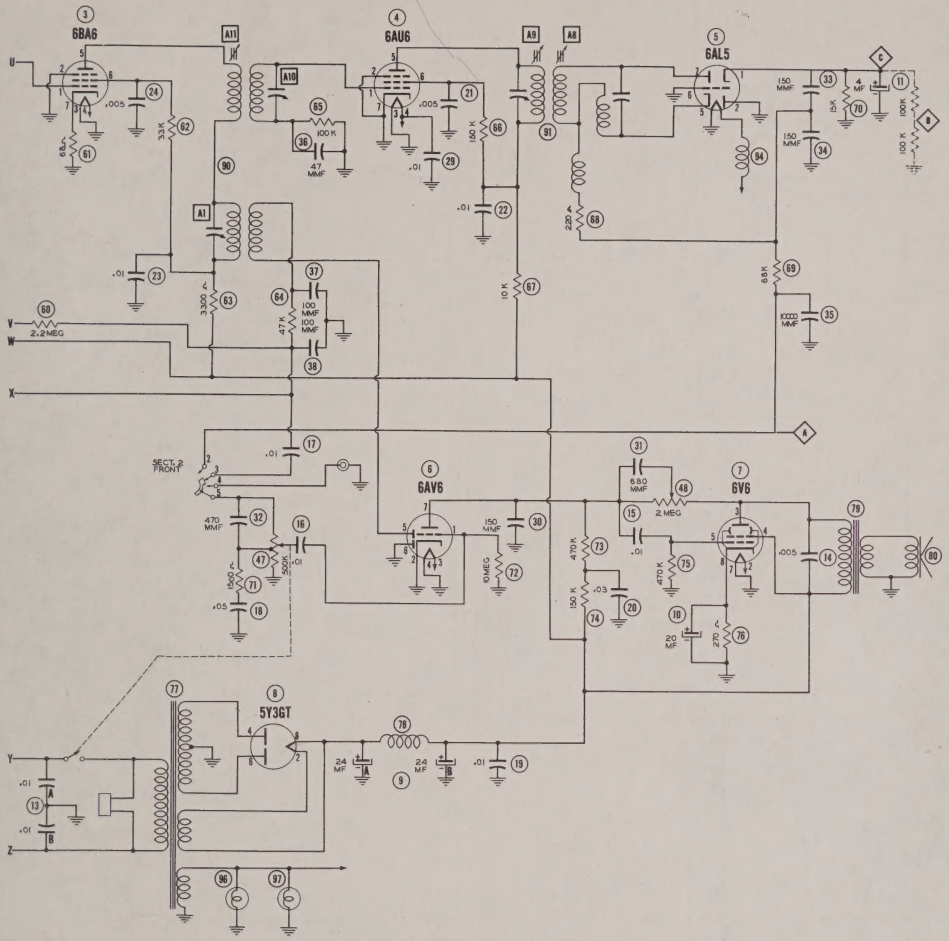

IF = 455 KC AM

IF = 10.7 MC FM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

If IF transformers are not badly out of alignment, steps 1 & 2 may be omitted. Connect signal generator as in step 3 and adjust A1 through A5 for maximum output.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to pin 1(Grid) of 6BA6 2nd IF tube(3). Low side to chassis.	455KC	AM (Center position)	Tuning cap. fully closed.	Across voice coil	A1	Adjust for maximum output.
2	.1 MFD	High side to pin 1(Grid) of 6BA6 1st IF tube(2). Low side to chassis.	"	"	"	"	A2,A3	" " "
3	.1 MFD	High side to large AM stator of tuning cap. Low side to chassis.	"	"	"	"	A4,A5	" " "
4		Loop.	1600KC	"	1600KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
5		Loop.	1400KC	"	Tune for maximum output.	"	A7	Rock tuning cap and adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Do not attempt alignment of FM IF's until AM IF's have been aligned.

In step 6 connect two 100KΩ resistors in series from point C to chassis. The junction of these two resistors is point B. These resistors must be within 5% of each other.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6	.001 MFD Mica Cap	High side to pin 1(Grid) of 6BA6 1st IF tube(2). Low side to chassis.	10.7MC (Unmod.)	FM (Counter clock-wise)	Tuning cap. fully closed.	D.C.Probe to point A. Common to point B.	A8	Adjust for Zero deflection.
7	.001 MFD Mica Cap	"	10.7MC (Unmod.)	"	"	D.C.Probe to point C. Common to chassis	A9,A10, A11,A12 A13	Adjust for maximum deflection. Set signal generator output attenuator for 4 volts deflection for next step.
8	.001 MFD Mica Cap	"	10.7MC (Unmod.)	"	"	D.C.Probe to point A. Common to point B.	A8	Adjust for zero deflection. Remove two 100KΩ resistors from point C.
9	.001 MFD Mica Cap	"	10.7MC (Unmod.)	"	"	D.C.Probe to point C. Common to chassis	A9	Adjust for maximum deflection.
10	.01 MFD	High side to small FM stator of tuning cap. Low side to chassis.	10.7MC (Unmod.)	"	"	D.C.Probe to point C. Common to chassis	A14, A15	Adjust for maximum deflection. Continue with FM RF alignment in step 11.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Do not attempt alignment of FM IF's until AM IF's have been aligned.

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
6	.01 MFD	High side to pin 1(Grid) of 6BA6 1st IF tube(2). Low side to chassis.	10.7MC (Freq.Mod.)	FM (Counter clock-wise)	Tuning cap. fully closed.	Vertical input to point D. Ground to chassis.	A10, A11, A12, A13	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig.1.
7	.01 MFD	High side to small FM stator of tuning cap. Low side to chassis.	10.7MC (Freq.Mod.)	"	"	"	A14, A15	" " "
8	.01 MFD	" "	10.7MC (Freq.Mod.)	"	"	Vertical input to point A. Ground to chassis.	A9,A8	Alternately adjust A9 for maximum amplitude and straightness of crossover lines, and A8 for occurrance of crossover on scope horizontal sweep-line per Fig.2. Continue with FM RF alignment in step 11.

FM RF ALIGNMENT

To check adjustment of FM oscillator coil, set signal generator at 88MC, and tune the receiver for maximum deflection. If dial pointer indicates 88MC no further adjustment is necessary. If the pointer is on the low frequency side of 88MC, slightly compress the oscillator coil; if the pointer is on the high frequency side of 88MC, slightly expand the oscillator coil.

To check adjustment of FM antenna coil, set signal generator at 90MC and tune the receiver for maximum deflection. Readjust A17 for maximum deflection. If setting is the same as in step 13, no further adjustment is necessary. If cap. of A17 is higher for maximum deflection, slightly compress the FM antenna coil; if cap. of A17 is lower for maximum deflection, slightly expand the FM antenna coil.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11	300Ω carbon resistor	High side to ant. terminal #2. Low side to chassis.	108MC (Unmod.)	FM (Counter clock-wise)	108MC	D.C.Probe to point C. Common to chassis.	A16	Adjust for max. deflection.
12	300Ω carbon resistor	" "	88MC	"	Tune for maximum deflection.	"	FM Osc Coil (87)	Check adjustment per prealignment instructions. Repeat steps 11 & 12 until no further improvement can be made, making step 11 last step.
13	300Ω carbon resistor	" "	105MC	"	"	"	A17	Rock tuning cap. and adjust for maximum deflection.
14	300Ω carbon resistor	" "	90MC	"	"	"	FM Ant. Coil (85)	Check per prealignment instructions. Repeat steps 13 & 14 until no further improvement can be made, making step 13 last step.

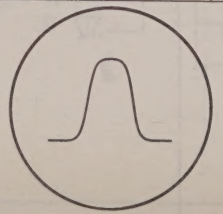

FIG. 1

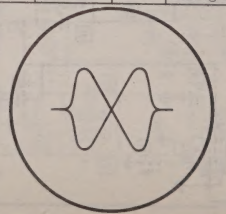

FIG. 2